DOCUMENT RESUME

ED 368 731 SP 035 180

AUTHOR Stang, Lucas; Miner, Kathleen R.
TITLE HIV Prevention. Health Facts.
INSTITUTION ETR Associates, Santa Cruz, CA.
REPORT NO ISBN-1-56071-184-1
PUB DATE 94
NOTE 102p.; For other volumes in the Health Facts series, see SP 035 173-182.
AVAILABLE FROM ETR Associates, P.O. Box 1830, Santa Cruz, CA 95061-1830 ($12.95).
PUB TYPE Books (010) -- Guides - Classroom Use - Teaching Guides (For Teacher) (052)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Acquired Immune Deficiency Syndrome; *Health Education; Health Materials; Health Promotion; *Prevention; *Public Policy; Resource Materials; Secondary Education; Sex Education; Sexuality; *Student Behavior; Venereal Diseases
IDENTIFIERS Comprehensive School Health Programs; *Sexually Transmitted Diseases; Sexual Relationships

ABSTRACT

The 10-volume "Health Facts" series is intended to supplement health education curricula and provide a handy reference for individuals who would like additional background information on particular health topics. The emphasis is placed on topics and examples relevant to youth of middle and high school age. The seven sections in this book provide teachers with basic facts about the Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) disease continuum from infection through illness and death. Across this continuum, the basics of this attack are presented. Also provided is a candid discussion of the behaviors that put a person at risk of HIV infection and the behaviors that can prevent its transmission. Information is provided to invalidate the many myths that surround the HIV/AIDS epidemic, including the notion of casual transmission and the possibility of insect vectors. Information is also provided on the manifestations of HIV infection, treatment, and public policy challenges. An easy to read reference format offers clear, concise data intended to familiarize educators with the most important facts about the issues and concerns. A glossary, a list of resources, and 24 references complete the volume. (LL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 368 731

HIV Prevention

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY

A Yonnwitz

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Lucas Stone

Kathleen R. Kelker, Ph.D.

SP035180

BEST COPY AVAILABLE

SP

HIV Prevention

HEALTH FACTS

Lucas Stang

and

Kathleen R. Miner, PhD, MPH, CHES

ETR ASSOCIATES
Santa Cruz, California
1994

ETR Associates (Education, Training and Research) is a nonprofit organization committed to fostering the health, well-being and cultural diversity of individuals, families, schools and communities. The publishing program of ETR Associates provides books and materials that empower young people and adults with the skills to make positive health choices. We invite health professionals to learn more about our high-quality publishing, training and research programs by contacting us at P.O. Box 1830, Santa Cruz, CA 95061-1830, 1-800-321-4407.

© 1994 by ETR Associates. All rights reserved.

Published by ETR Associates, P.O. Box 1830,
Santa Cruz, California 95061-1830

Printed in the United States of America
Designed by Ann Smiley
10 9 8 7 6 5 4 3 2 1
Title No. H304

Library of Congress Cataloging-in-Publication Data

Stang, Lucas.
HIV prevention : health facts / Lucas Stang, Kathleen R. Miner.
p. cm.
Includes bibliographical references.
ISBN 1-56071-184-1
1. HIV infections—Prevention. 2. AIDS (Disease) I. Miner, Kathleen Rae, 1946– . II. Title.
RC607.A26S693 1994
616.97'9205—dc20 93-43137

Contents

HIV Prevention

Editor's Preface v
Introduction ix

HIV/AIDS: A Modern Epidemic 1
Who Is Affected? 2
Changing Terminology 3
The Scope of the Epidemic 5
The Origins of HIV 7
Transmission Trends 9
1-Minute Facts 11

The Immune System and HIV 13
The Immune Response 15
How the Immune System Is Affected by HIV 19
1-Minute Facts 22

Transmission and Testing 23
Sexual Transmission 25
Transmission Through Contaminated Needles 28
Prenatal and Perinatal Transmission 28
Transmission Through Blood Transfusions or Products 29
Ways HIV Is Not Transmitted 29
Testing for HIV 30
1-Minute Facts 34

Prevention 35
Preventing Sexual Transmission 36
Preventing Needle-Use Transmission 41
Preventing Transmission from Mother to Child 41
Preventing Infected Blood Products Transmission 43
Health Care Precautions to Prevent Transmission 43
1-Minute Facts 44

Manifestations of HIV Infection 45
Acute Infection 46
Seroconversion 47
Asymptomatic HIV Infection 48
Symptomatic HIV Infection 49
Acquired Immune Deficiency Syndrome (AIDS) 52
1-Minute Facts 56

Treatment 57
General Recommendations for Staying Healthy 58
Chemical Therapies 59
Alternative Medicine 62
1-Minute Facts 64

Public Policy Challenges 65
Legal Aspects 67
Developing HIV/AIDS Policies 69
The Role of Schools 70
1-Minute Facts 72

Glossary 73
Resources 81
References 85
Index 89

Editor's Preface

Everyone agrees that children and youth need to learn skills for establishing good health habits. Most people also agree that the earlier health education starts, the better its success.

The books in the *Health Facts* series were written to provide the background information educators need as they teach young people about health. The information is provided in a way that makes it easy for educators to familiarize themselves quickly with the most important facts about a health topic.

Rather than providing indepth information in each content area, the books offer guidance to the balance of emphasis. They help educators approach health topics with confidence and focus health content as they teach.

Titles in the Series

Each volume in the series contains information about a different content area. The following ten books comprise the series:

- *Disease Prevention*
- *Drug Use Prevention*
- *Environmental and Community Health*
- *Fitness*
- *HIV Prevention*
- *Injury and Violence Prevention*
- *Mental and Emotional Health*
- *Nutrition*
- *Sexuality*
- *STD Prevention*

Contributors

These books were written by the following talented and knowledgeable professionals in collaboration with ETR Associates' staff.

Nora Krantzler, PhD, MPH, is a freelance writer and researcher who specializes in issues related to health. She has a doctorate in medical anthropology and a master's in epidemiology. Her work has been presented in professional journals, at meetings of professional societies, in government reports and policy manuals, and in other books. Topics have included nutrition issues, child abuse and neglect, and medical practice.

Kathleen R. Miner, PhD, MPH, CHES, is associate professor and coordinator of health promotion and education in the Division of Behavioral Science and Health Education at Emory University School of Public Health. She has traveled internationally as a health educator and is the author of many articles about education and health. A former high school health and biology teacher, she has been a key contributor in designing these books to be useful to teachers.

Lucas Stang has a background in biology and health, with graduate work in science communication. He has been writing health materials for ten years. He recently served as wellness coordinator for the International School in Manila, Philippines, where he developed a kindergarten through grade 12 health curriculum and taught high school health. He has also taught human sexuality at the junior college level.

Acknowledgments

We would like to thank the following people, who provided reviews and content expertise.

John T. Boothby, PhD, is an associate professor at San Jose State University in San Jose, California, where he teaches microbiology and immunology.

Rama Khalsa, PhD, is a clinical psychologist and the director of the Santa Cruz County Department of Mental Health in Santa Cruz, California.

Wendy J. Schiff, MS, is a technical writing specialist in health and nutrition and teaches health at St. Louis Community College in St. Louis, Missouri.

In addition, we would like to thank Mary Nelson, publisher of ETR Associates, for the concept idea, Kathleen Middleton, editor-in-chief of ETR Associates, for her review and conceptualization, and Jill Schettler for her help in editing.

Netha Thacker
Project Editor

Introduction

A frank and forthright approach is needed in all communications about AIDS to increase understanding of how HIV is and is not transmitted and to motivate responsible actions to prevent its further spread. In the absence of a vaccine, education is the most promising, socially acceptable strategy for preventing HIV transmission.

—Karen S. Heller

The AIDS epidemic has shocked American society. The United States had become complacent in its response toward infectious disease. The advances of modern medical practice and the availability of vaccines and antibiotics gave people a feeling of immunity. People believed that if they caught something contagious, a pill or shot could make it go away.

When a new disease called HIV/AIDS became a leading cause of death in the homosexual populations of New York and California, many Americans felt insulated from it. HIV/AIDS was of no consequence to them or their families. Even

when HIV/AIDS became a major killer of injection drug users, people with hemophilia and people who had had blood transfusions, most Americans remained ignorant of the seriousness of the epidemic. They either minimized its importance by expecting modern medicine to conjure up a cure in a few short months, or dismissed its importance by assuring themselves that no one in their community participated in homosexual or other such behaviors.

While people were denying the gravity of HIV/AIDS, the disease began its persistent and insidious creep into all corners of American society. By the early nineties, nearly 14 years into the epidemic, American complacency had been shattered. In 1993, the Centers for Disease Control and Prevention estimated that one million Americans were infected with HIV, the virus that causes AIDS.

HIV does not discriminate by sexual orientation, ethnicity, religion or geography. HIV is in every community in the United States. Although the search for a vaccine continues, the possibility of this breakthrough is still decades away.

The only antidote to the AIDS epidemic is prevention of HIV infection in the first place. And the only viable strategy for prevention is education. All people, young and old, urban and rural, rich and poor, heterosexual and homosexual, must have an unmistakable and straightforward understanding of the behaviors associated with HIV transmission. Unfortunately, more than 200,000 Americans and millions of people worldwide died of HIV/AIDS before people were forced to understand that with any disease, no matter how terrifying it may seem, complacency does not cure and ignorance does not prevent.

HIV Prevention: Health Facts provides educators with the facts about the HIV/AIDS disease continuum from infection through illness and death. Across this continuum, the book presents the basics of how HIV attacks the body and how the body attempts to respond to this attack. The book also presents a candid discussion of the behaviors that put one at risk of HIV infection and the behaviors that can prevent its trans-

mission. Information is provided to invalidate the many myths that surround the HIV/AIDS epidemic, including the notion of casual transmission and the possibility of insect vectors.

The Role of Education

The research conducted during the past thirty years has offered greater insight into the causes of chronic disease, injury and violence. This research indicates that these conditions are primarily caused by human behavior. What people do or do not do places them at risk of acquiring chronic diseases or experiencing serious injuries.

The behavioral components associated with the modern pattern of disease and injury create the potential for preventing most of these health problems by changing behavior. Comprehensive health promotion and education programs provide the foundation for modern disease prevention.

Ideally, the health promotion and education process begins early. Early education provides the opportunity to reach children and youth before they begin to adopt the behaviors associated with chronic disease, sexually transmitted disease, drug use, injury and mental illness. Through a systematic review of health promotion and disease prevention, educators can help children and youth enhance their health while helping them avoid illness and injury.

The Health Facts Series

HIV Prevention: Health Facts is part of a ten-volume series designed to provide clear, concise content and to be complementary to curricula published by ETR Associates and other health education curricula. Other volumes in this series that

relate to HIV prevention include *Disease Prevention, Drug Use Prevention, STD Prevention* and *Sexuality.*

Classroom teachers, counselors, school nurses and others are often called upon to become instant health educators. They may be asked to answer questions, present information and lead discussions on health topics in which they feel unprepared.

The *Health Facts* series is designed to be a handy reference for individuals who would like additional background information on particular health topics. The emphasis is on topics and examples that are relevant to youth of middle and high school age. By design, the presentation of each of the topics is brief. References and resource listings direct the reader to additional relevant information. All of the volumes in this series offer a user-friendly format that is easy to read and factual.

The volumes discuss health and disease in straightforward language. Educators may want to review each volume for its appropriateness for their school and community before assigning the books for student use.

This book and the rest of the series can serve as useful additions to classroom, school or library collections. Health care professionals may choose individual volumes or the entire series as a convenient reference for patient education programs or as reading material in office waiting rooms. Individuals may find the series useful as a home reference as well.

HIV/AIDS: A Modern Epidemic

Myth: Biological warfare is responsible for AIDS.

Fact: AIDS is caused by a retrovirus called human immunodeficiency virus, or HIV. There is scientific evidence that HIV has been infecting humans since at least the mid-1960s. There is no evidence that a diabolical plot or an accidental release of environmental agents is responsible for AIDS.

In the spring of 1981, five Los Angeles cases of *Pneumocystis carinii pneumonia* (PCP) were reported to the Centers for Disease Control (CDC) in Atlanta. The CDC, now referred to as the Centers for Disease Control and Prevention, is the federal government's research facility that monitors disease patterns, conducts research on the causes and the treatments of new infections and trains public health workers.

The CDC conducted a preliminary investigation of these cases of PCP and published its findings in the 5 June 1981 issue of the *Morbidity and Mortality Weekly Report (MMWR)*. The report noted that two of the five patients had died.

Dr. James Curran, the chief of the CDC's Venereal Disease Research Department, took particular interest in the *MMWR* report's editorial note, which stated that PCP, a disease limited exclusively to patients with severe immune problems, had infected these five previously healthy people. The note suggested that since all five patients were gay men, some aspect of a homosexual lifestyle or sexual practice might be responsible for the unusual cases of PCP.

Curran and his staff of medical and behavioral scientists began to pay special attention to the disease. As they investigated additional, similar cases of PCP, they found that some of those affected also had a rare cancer called *Kaposi's sarcoma* (KS). KS was not typically a problem for young people whose immune systems were functioning.

Curran was joined in his research by Dr. Dennis Juranek, then deputy director of the CDC's division of parasitic diseases. They found 26 additional cases of KS. Six of the patients also had PCP. Twelve had been found to have *cytomegalovirus* (CMV). Some also had thrush or a virulent form of anal herpes. All 26 were gay.

By July, not only were more cases of these unusual diseases reported, but at least three more young men had died. By the end of August 1981, the CDC knew of seventy more cases. The death toll was 40%, and whatever caused this ever-widening array of symptoms was spreading fast. Researchers were confronted with a disease unlike any seen before—one that attacked the body's ability to defend itself.

Who Is Affected?

With the benefit of hindsight, it is now clear that AIDS is not a disease that affects only gays. Infection with HIV, the virus that causes AIDS, isn't a function of a person's sexual orientation, gender or ethnicity. Personal behaviors, not who one is, put one at risk of HIV infection. But, at the beginning of the

epidemic, because the first group of patients in the United States were gay, researchers looked at homosexual behaviors for possible links to the disease.

Studies of the sexual behavior of the gay men interviewed by the CDC included information on their sexual partners and histories of other sexually transmitted disease. The studies found that the men's sexual activities included anal intercourse and other anal activities known to cause bruising and abrasions. These practices had provided a perfect environment to spread the new deadly organism. This profile led to the first name for the new syndrome, *GRID*, which stood for *gay-related immunodeficiency*.

The fact that gay people, like straight people, are integrated throughout society and make many different lifestyle choices was overlooked. If being gay had caused the disease, gay men from varying geographic regions should have been infected. There were millions of gay men who did not get sick; only a relative few who behaved in particular ways had become infected.

Also overlooked were reports that drug addicts, heterosexual Haitian immigrants, hemophiliacs, blood transfusion recipients and prostitutes had come down with the same disease symptoms. Almost from the start, GRID was a misnomer.

Changing Terminology

By the fall of 1982, the number of cases had risen to 593, and 243 people had died. Cases had been reported in 15 states, the District of Columbia and at least two countries other than the United States. It was becoming increasingly clear that homosexuals were not the only ones who had been affected by the disease, whatever it was. GRID was definitely not an appropriate term.

Don Armstrong, chief of infectious diseases at New York's Sloan-Kettering Cancer Center, is credited with coining the

name AIDS, or Acquired Immune Deficiency Syndrome. The name was adopted because it fit what was known about the disease:

- It was not inherited.
- It attacked the immune system.
- It could manifest in many forms.
- It did not infect only a particular group of people.

By 1983, 3,000 cases of AIDS had been reported in 42 states, the District of Columbia and Puerto Rico. The disease had also been recognized in twenty other countries. There were clear patterns of infection, but the cause had not been isolated.

Scientists around the world were testing various theories, and two laboratories, one in the United States and the other in France, were closing in on an answer. Dr. Robert C. Gallo, chief of the National Cancer Institute's Laboratory of Tumor Cell Biology at the National Institutes of Health, had discovered a retrovirus in the 1970s that caused certain forms of human cancer. He called the microbe *human T-cell leukemia virus*, or *HTLV-1*, and believed this organism might be the cause of AIDS.

At about the same time, a French researcher, Dr. Luc Montagnier of the Pasteur Institute, had identified a retrovirus he called *LAV*, for *lymphadenopathy-associated virus*. Montagnier had tested blood samples from AIDS patients and found LAV in 90% of them.

In 1984, Gallo announced he had isolated a new virus, which he named *HTLV-3*. He had found antibodies, or biological markers for the virus, in the blood of 90% of the AIDS patients he had tested. Gallo's lab also developed a way to mass produce the virus protein and proved that HTLV-3 destroyed the same immune cells in vitro that AIDS destroyed in the human body. Later research showed that HTLV-3 and LAV were the same virus. Gallo was credited with the co-discovery of the virus.

The various names that had been given to the virus by different researchers caused a lot of confusion. In 1986, an international panel suggested the virus be called HIV, which stands for *human immunodeficiency virus*. HIV is now the name used commonly throughout the world.

The Scope of the Epidemic

Once it was known that HIV caused AIDS, knowledge about the virus began to grow quickly. Scientists were able to find antibodies to the virus in human blood obtained for other purposes in the 1970s. They learned that people of Central Africa had been dying of AIDS, known there as *Slim disease*, for a decade.

It became clear that HIV caused different symptoms at different times in different people. Many had mild symptoms. Many had very unusual, severe symptoms that did not fit the official diagnostic criteria for AIDS. The term *ARC*, or *AIDS-related complex* or *condition*, was used to describe these varying conditions.

What Is a Syndrome?

Simply put, a syndrome is a collection of symptoms. Symptoms may differ because the causative agent affects different people in different ways. Two individuals may be victims of the same syndrome but have different symptoms.

People with *Down syndrome* can have mild to severe disabilities. *Premenstrual syndrome* can cause painful cramps in one woman and depression in another.

What's different in *Acquired Immune Deficiency Syndrome (AIDS)* is the large number and severity of symptoms that are rarely seen in people with normal immune function.

However, ARC is not often used today. Now the terms *HIV disease* and *HIV infection* are defined more specifically by the asymptomatic and symptomatic stages preceding and including AIDS. People with AIDS are often referred to as PWAs, people with AIDS, or as PLWAs, people living with AIDS.

Scientists also learned more about how HIV is transmitted. Because HIV can live in blood, semen, preseminal fluid, vaginal secretions and breast milk, it can be spread from person to person by very direct contact with these body fluids. Sexual intercourse, blood transfusions and sharing needles for injecting drugs, tattooing or body piercing are ideal ways to transmit the virus. These methods matched the histories of almost all known cases of infection.

It also became clear that after a person had been infected with HIV, that person could pass the virus to others whether he or she had symptoms or not. The world medical community began to realize that the epidemic was much more widespread than anyone had suspected. The relative handful of people who had been diagnosed with AIDS represented only a fraction of those who were infected. The world was now dealing with a disease that probably had begun not in 1981 but in the late sixties or early seventies, and millions of people had already been infected.

According to the World Health Organization (WHO), there is now no place in the world that is free of HIV. In 1992, WHO estimated that 8 to 10 million adults and 1 million children had been infected. WHO predicts the number of people infected worldwide will double or triple by the year 2000.

Other world health groups estimate 10 to 13 million people are already infected. Major epidemics are emerging in Asia and Latin America, and the worldwide number of HIV cases is expected to rise to between 30 and 110 million by the year 2000.

The African Experience

The AIDS epidemic in Central Africa is very serious. In some countries, the incidence of AIDS is almost three times the rate in the United States. Some studies suggest that up to one-third of the population of Central Africa—men, women and children—may already be infected with HIV.

The first cases of a strange deadly disease were reported in Africa in the 1970s. Ugandan doctors began treating patients who were literally wasting away. Constant diarrhea was causing weight loss in excess of twenty pounds. The wasting syndrome became known as *Slim disease.*

At first researchers thought Slim disease was unique. However, thorough studies have proven it is another form of AIDS caused by HIV. There is no cure for this disease, and the men, women and children affected by it usually die within a year.

The strain of the virus most prevalent in western Africa is referred to as *HIV-2.* There are currently a few reported cases of HIV-2 in the United States that have been linked to West Africa. All other cases in the United States are termed HIV-1.

There is a different pattern to the disease in Central Africa than in the United States. Almost half of the people living with AIDS in Africa are women. There the disease is primarily spread sexually by heterosexual activity.

The Origins of HIV

The exact origins of HIV and AIDS are not known. Either it is a new disease that developed from a retrovirus only recently, or it is a disease that was previously isolated in a particular geographic group of people.

The best scientific guess is that at some point in time, during a natural cellular process, there was a chance mutation of a virus associated with some other living organisms—a mutation that gave the virus the ability to infect humans. Mutations at the cellular level are fairly common, but this particular type of mutation was very unusual. HIV may have begun through cellular mutation and then been spread through sexual intercourse and contaminated needles.

No one is certain exactly when HIV first occurred in the United States. But its deadly effects began to be seen in the U.S. population in the early 1980s.

U.S. Infection Rates

The number of people diagnosed with AIDS is expected to rise. The U.S. Public Health Department projects that by the end of 1994 there will be between 415,000 and 535,000 clinically diagnosed AIDS cases in the United States.

An AIDS diagnosis doesn't tell the whole story. In 1993, CDC estimates indicated that the HIV infection rate in the United States was approximately 1 in 200.

The 1993 *Final Report of the National Commission on AIDS* concludes, "Indeed, even if there were no new instances of infection from now on, the nation would be severely challenged just to meet the care needs of those already infected. Yet new infections will continue unless we do far better at prevention, and of course their impact will extend beyond the year 2000" (National Commission on AIDS, 1993).

Transmission Trends

Infection among heterosexuals is rising rapidly. AIDS cases in people exposed through heterosexual contact increased 17% in 1992. AIDS cases among women rose 9% between 1991 and 1992, compared with 2.5% among men.

African-American and Hispanic women make up only 21% of U.S. women but constitute 75% of all women diagnosed with AIDS. Because more women are being diagnosed with AIDS, more babies are being born with HIV infection. Eighty-five percent of these babies are African American or Hispanic. There is also a growing population of "AIDS orphans," who are not infected themselves but have lost their parents to AIDS.

Especially frightening is the spread of HIV among adolescents. At the end of 1991, more than 8,000 teenagers and young adults had been diagnosed with AIDS. By 1992, AIDS cases increased 65% due to heterosexual transmission among people 13 to 19 years old. Many more people in their twenties are now developing AIDS, which indicates that they were probably infected with HIV during their teenage years.

HIV transmission among older men who have sex with other men is down sharply from 1980s' levels. Unfortunately, young gay men seem to be rejecting the warnings of early survivors. Transmission is rising within this new generation.

Drug use continues to have a significant impact on infection. Sharing injection equipment, often followed by sexual transmission to partners, continues to fuel the spread of HIV. Drug users who do not inject drugs, especially those who use crack cocaine or alcohol, are also at high risk because their judgment about risk taking is affected by the drug.

Recent studies estimate that 25% of the population are likely to have a sexually transmitted disease at some point in their lives. One study of a large sample of adults found 15 to 30% reported having unprotected intercourse with multiple partners. Many heterosexual individuals still do not realize they are at risk for HIV infection.

Why Are Teenagers So Vulnerable?

Developmentally, teenagers are in a period of their lives in which they experiment with identities, interests and behaviors, including sexual and drug behaviors. They do not recognize their own risk and believe that they are invulnerable to HIV.

The CDC has found that about 75% of high school seniors are sexually active. The proportion of teenage women having sexual intercourse increased from 36% in 1971 to 47% in 1982 and to 53% in 1988. Other factors contributing to teenage vulnerability include:

- an increase in multiple partners
- high rates of other sexually transmitted disease
- low rates of condom use
- experimental drug behavior

1-Minute Facts

- Although HIV/AIDS was first seen as a gay disease, it was later realized that the virus affected people according to their behavioral practices, not their sexual orientation.

- As researchers made new discoveries about the disease, the terms used to describe it had to be changed. It is now known as the human immunodeficiency virus (HIV).

- According to world health groups, approximately 10 million people are infected with HIV today. No place in the world is free of the virus.

- No one is sure exactly where HIV originated, but it probably began with a chance mutation of a virus that had previously only affected other living organisms.

- As transmission trends change, different groups are affected by HIV/AIDS. Infection rates among older gay men have dropped dramatically since the 1980s, but young gay men and growing numbers of heterosexuals, particularly women of color, adolescents and injection drug users, are being infected with HIV.

The Immune System and HIV

Myth: People die of AIDS.

Fact: Technically, this is false. People who have been infected with HIV develop progressively weaker immune systems, which reduces their ability to resist diseases caused by organisms that would normally have little or no harmful effect. In advanced HIV disease, these "opportunistic infections" can cause death. People die from diseases such as cancer, pneumonia or other infections that take advantage of immune deficiency.

Humans are well adapted to defend against pathogens, or germs. They have developed a sophisticated and sturdy immune system that, either naturally or through vaccines, keeps them safe from disease organisms.

This inborn disease-fighting system has several components. Some of these components react in nonspecific or general ways to discourage infections; others fight against particular pathogens. The following five components comprise the body's general response to infection:

- species-specific resistance
- mechanical barriers to infection

- chemical defenses
- white blood cells
- the inflammatory response

- **Species-specific resistance:** Different species of animals are susceptible to different diseases. The exact virus that causes AIDS-like symptoms in other animals does not affect people.

- **Mechanical barriers to infection:** Most pathogens, including HIV, cannot penetrate intact human skin. The skin's cells are constantly being shed and renewed, and glands secrete oils that kill bacteria. The tissues and mucus that line the respiratory and gastrointestinal tracts also provide a tough barrier to germs, and the stomach lining secretes acid that kills microorganisms.

- **Chemical defenses:** If pathogens do penetrate the skin barrier, they are attacked by chemicals produced by a variety of body cells. For example, cells infected by viruses, including HIV, produce *interferons*, a family of proteins that protect neighboring host cells from the virus.

- **White blood cells:** These special cells, which are located throughout the body, have the ability to kill pathogens. Some white blood cells, called *phagocytes*, can find, engulf and destroy foreign particles. Phagocytes can migrate through blood-vessel walls to fight infection. Phagocytes are also found as specialized cells within tissues. These cells are particularly abundant in the spleen, liver, lymph nodes and bone marrow.

- **The inflammatory response:** The inflammatory response is the body's ability to concentrate phagocytes and other white blood cells and its chemical defenses in an area of infection.

The Immune Response

The five natural defense mechanisms are general responses to infection, but the body also reacts to specific invading pathogens and the toxins they may release. The immune response involves groups of special cells that can recognize and deactivate disease organisms and remember them to prevent future infection by the same pathogens. The immune response is composed of:

- lymphocytes
- antibody-mediated immunity (B-cells)
- cell-mediated immunity (T-cells)

In addition, artificial immunity may be produced by vaccines that stimulate the immune response. Artificial immunity also occurs when antibodies cross the placental membrane to the fetus; this is called *passive* immunity.

■ **Lymphocytes:** Lymphocytes are immature white blood cells that originate in the bone marrow. They are small, round cells with large nuclei. Adults have about 2 trillion of these cells at any given time.

Lymphocytes generally lie dormant in the bone marrow, spleen, tonsils, thymus, lymph nodes and intestinal lining. When signaled to action by the presence of foreign material or infecting pathogens, they move quickly to the affected site.

Before reaching maturity, lymphocytes are released from the bone marrow and circulated throughout the body. About half end up in the thymus and become *T-cells*, and half return to the bone marrow to mature and become *B-cells*.

Antigens are proteins, polysaccharides or other substances that are important components of bacteria and viruses. Both T-cells and B-cells have receptor molecules on their surfaces that can recognize and bind to these antigens and destroy them. However, T-cells and B-cells react to antigens in different ways.

- **Antibody-mediated immunity:** B-cells combat antigens by making substances called *immunoglobulins*, or *antibodies*. Antibodies attach to antigens and render them harmless. Antibodies are very specific. Each antibody "fits" only one type of antigen, the way only one key fits a particular lock. This type of immunity is called antibody-mediated immunity.

  Some B-cells multiply rapidly during an infection but do not make antibodies at that time. Instead, they remain in the tissue or circulatory system for months or years. If the B-cells encounter the same kind of antigen again, they act as if they remember it. They rapidly make and release the specific antibody needed, so the antigen is destroyed before it can cause illness. This process is known as *active immunity*.

- **Cell-mediated immunity:** T-cells attach themselves directly to invading pathogens and destroy the antigens. T-cells recognize cells in which pathogens are growing and attract white blood cells to these areas to fight the infection. This type of immunity is called cell-mediated immunity. It is especially important in combating viruses, which can spread directly from cell to cell.

  There are three types of T-cells:

  - **Helper T-cells** stimulate the development of B-cells or other T-cells.
  - **Suppressor T-cells** inhibit the growth of certain cell types and are responsible for turning off the immune response after an infection is contained.
  - **Killer T-cells** attack pathogens that normal T-cells, B-cells and phagocytes can't handle. Killer cells seem to inject something that causes cells infected by viruses to burst. They may also be important in protecting against a variety of cancers.

The Basic Battle Plan

When a pathogen infects a person with a healthy immune system, the body declares war. It calls up its standing army of 1 trillion white blood cells to eliminate the enemy. Here is how the immune response works:

Pathogens enter the body. Roving white blood cells, or phagocytes, immediately destroy a few of these foreign particles and display an "antigen-alert" signal.

Helper T-cells in the bloodstream see the signal and attach to the phagocytes. This activates the helper T-cells.

Activated helper T-cells begin to multiply, which stimulates replication of killer T- and B-cells. As the number of B-cells increases, helper T-cells signal them to start producing antibodies.

Virus particles that have evaded detection enter body cells—the only places they can replicate. Killer T-cells sacrifice these infected cells by chemically puncturing their membranes, causing the cells' contents to spill out. Antibodies, which by now are abundant, then neutralize the viruses by attaching directly to their surfaces. Finally, other white blood cells arrive to clean up the dead "bodies."

As the infection is contained, a full assault is no longer necessary. Suppressor T-cells turn off the immune response, but sentinel cells remain in the system. Memory cells and antibodies stay in the blood and lymphatic systems, ready to move quickly if the same pathogen ever returns.

- **Artificial immunity:** Vaccines create artificial immunity by stimulating the immune system to produce antibodies and cell-mediated immunity to inactivate the disease-causing organisms. Vaccines are safe because they contain modified or weak strains of the microbes (or the toxins these microbes create) that aren't strong enough to cause disease, but still cause the immune system to make antibodies.

  Creating an HIV vaccine presents a particular challenge to scientists. HIV is a *retrovirus*, and a successful vaccine has never been developed for a retrovirus.

Criteria for AIDS Diagnosis

In 1993, the CDC instigated a new classification system for AIDS that attempts to provide uniform criteria for staging the progress of the disease in adult and adolescent males and females.

People don't actually die of AIDS. Rather, HIV-infected people with weakened or nonfunctional immune systems are more susceptible to many diseases that can be fatal. These "opportunistic infections" are rarely serious in people with normal immune function, but can cause extreme illness in people infected with HIV.

In addition to using a specific list of opportunistic infections as indicators, the new classification system incorporates blood tests designed to count the number of lymphocytes. The average number of lymphocytes in a healthy person is approximately 6,000 to 8,000 per cubic millileter of blood.

Fewer lymphocytes means there is an increased chance of life-threatening infections. In the new system, as the number of T-cells falls below 500 per cubic millimeter, the person's disease status increases.

People with fewer than 200 helper T-cells per milliliter are diagnosed as having AIDS. There are some cases of HIV-infected people with 200 or fewer helper T-cells who have no symptoms.

How the Immune System Is Affected by HIV

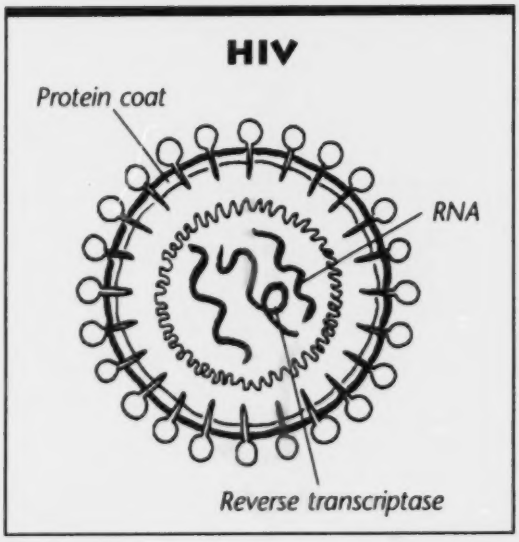
HIV attacks helper T-cells, the first line of cellular defense against invading microorganisms.

The Infection Process

HIV recognizes helper T-cells because they have specific receptor sites for it. HIV is unable to attach itself to most other kinds of cells.

HIV enters the blood stream concealed inside a helper T-cell from an infected host. It usually arrives as a hidden passenger in blood or semen.

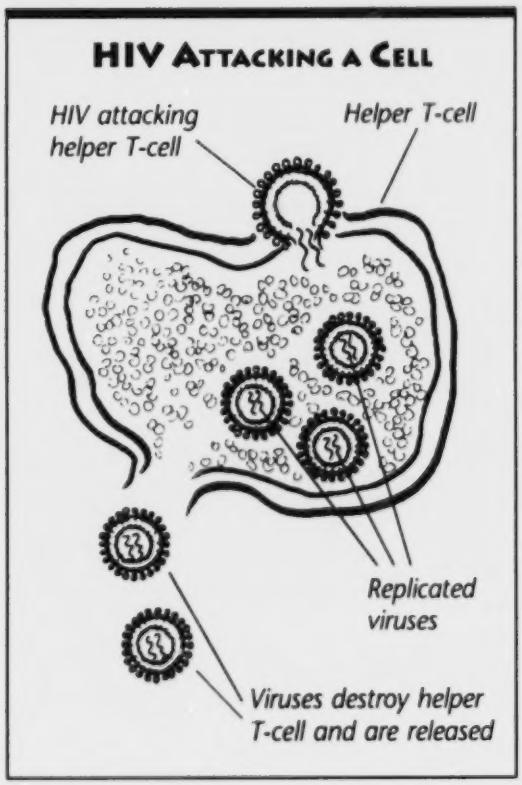
HIV can remain inactive inside a dormant helper T-cell for months or years. The exact mechanisms of HIV replication are not clearly understood, but scientists think there are two ways that HIV spreads within the body.



Structure of the human immunodeficiency virus

The only part of the immune system that can recognize HIV within a living cell is another helper T-cell. When a helper T-cell bumps into and attaches to an infected cell, the HIV slips into the defender's membrane and disables it before it can alarm the rest of the immune system. The HIV has now invaded the defending cell, creating two viruses and two infected cells. In this cell-to-cell manner, HIV replicates very slowly.

Eventually, some other infection occurs. When the body's helper T-cells read signals that indicate the presence of an antigen, they reproduce and fight the infection. But cells infected with HIV do not respond normally. Instead, they begin mass producing HIV. The new HIV is released into the bloodstream, where it searches for new helper T-cells to invade. Eventually, the originally infected cell breaks open and dies.



HIV attacks helper T-cells.

When the triggering infection is finally under control, suppressor T-cells turn off the immune response. But now, many more helper T-cells have been invaded by HIV, and the immune system is permanently weakened.

Viruses and Retroviruses

A virus is a protein-coated bundle of genes. The genes contain instructions for making copies of themselves to produce more virus. Viruses are very tiny; a normal cell has a diameter 1,000 times that of a typical virus.

A virus needs to use the reproductive structures of other cells to replicate. A virus attaches itself to a host cell and releases a chemical that creates a hole in the host cell's membrane. Genetic material (DNA or RNA) from the virus seeps into the host and attaches to its DNA. The host cell inadvertently produces many copies of the virus. Eventually, the infected cell ruptures and dies. This releases new viruses that are now free to infect other cells, and the cycle begins again.

HIV belongs to a group of organisms called retroviruses. The basic structure of retroviruses is similar to other viruses. The genetic material shed by retroviruses is RNA, *ribonucleic acid.*

In living cells, RNA functions as a messenger between the DNA, *deoxyribonucleic acid,* and the rest of the cell. DNA copies the information onto a single strand of RNA. RNA migrates from the nucleus to the cell's cytoplasm and directs protein manufacturing.

Retroviruses reverse the process by using a special enzyme called *reverse transcriptase.* This enzyme copies RNA onto DNA, the genetic form that the host cell uses. The viral DNA is incorporated into the host's nucleus, which then reads the genetic message and creates great quantities of viral RNA. The host cell eventually bursts and releases new viral particles, which go on to infect other cells.

Immune Deficiency

A healthy person has about twice as many helper T-cells as suppressor T-cells. In HIV infection, this ratio changes as more helper T-cells become inactive and die.

The ever-smaller number of helper T-cells continue to recognize antigens and may even begin to mobilize a defense. Before there is any significant response, however, the greater number of suppressor T-cells turn off the system.

When this happens, phagocytes and killer T-cells receive no signal they are needed, and B-cells don't know to make antibodies. In other words, the body loses its ability to defend against disease.

1-Minute Facts

- The human body has several natural defenses against disease that react in nonspecific ways to fight infections such as HIV.
- The body also produces an immune response to deactivate disease organisms and prevent them from causing future infection.
- The immune response involves three components: lymphocytes, antibody-mediated immunity (B-cells) and cell-mediated immunity (T-cells).
- Artificial immunity created by vaccines is not yet available for HIV or any other human retrovirus.
- HIV is a retrovirus that attacks helper T-cells, the first line of defense against invading microorganisms. This weakens the body's entire system of defense.

Transmission and Testing

Myth: HIV can be spread through casual contact.

Fact: HIV is spread through the transmission of specific body fluids from an infected person to another person. It is not spread through the air, water or food or contact with the skin.

HIV lives within the cells that make up certain body fluids, especially blood, semen and vaginal secretions. People become infected by having very direct contact with any of these fluids of someone who is already infected. HIV is not transmitted through urine, saliva or tears because it is not found in high enough concentrations in these body fluids.

HIV transmission occurs mainly in the following four ways:

- having unprotected sex with someone who has HIV
- sharing needles or other equipment for injecting drugs (including steroids) or vitamins or for piercing or tattooing

General Principles of Contagion

Infectious diseases are caused by microorganisms, such as viruses, bacteria and fungi. *Contagious* diseases are spread from person to person. Some diseases, such as influenza and HIV, can be infectious and contagious.

Contagious diseases follow rules of susceptibility, type of contact, efficiency of transmission, inoculation size and incubation period.

- **Susceptibility:** People are not susceptible to all disease organisms. If they have been previously infected with a disease-causing microbe or have been vaccinated against it, they will have antibodies to it and may not be susceptible.
- **Type of contact:** Whether susceptible or not, a person will not get a disease if the type of contact is wrong. Specific microbes can only live in specific environments. Getting influenza virus on your arm won't make you sick. This virus requires mucous membranes, such as those of the nose, throat and lungs. HIV cannot be breathed in or caught by touching an infected person. HIV is only transmitted by getting infected blood, semen, vaginal secretions or breast milk inside one's body.
- **Efficiency of transmission:** Some infectious agents are more likely than others to spread from person to person. Even very brief contact with a person who has influenza is likely to result in infection, but HIV requires specific, prolonged contact because its transmission is much less efficient.
- **Inoculation size:** Efficiency of transmission also depends on the number of infectious agents. Getting sneezed on greatly increases the chance of getting influenza because the dose of infectious agents is high. Similarly, a blood transfusion with HIV-contaminated blood is a very efficient way to spread the virus. Contact with HIV-infected tears, on the other hand, is inefficient because tears contain a very small amount of the virus.
- **Incubation period:** Once infected, a person may continue to feel well for a period of time before symptoms develop. Even without symptoms, he or she can pass the microbe to others. The incubation period of a disease can be a few days, as with influenza, or several years, as with HIV.

- from mother to fetus in the womb or to the baby during birth or breastfeeding
- receiving blood transfusions or blood products, organs or tissues from before 1985 when blood and blood products were not routinely tested as they are now

Sexual Transmission

HIV is found in infected semen, preseminal fluid and vaginal secretions. These body fluids contain high amounts of the same white blood cells in which HIV is found.

Partners have intimate contact with the body fluids that transmit HIV during sexual intercourse. Sexual activity can cause microscopic cuts in the mucous membranes of the penis, vagina or rectum. Cuts allow cells carrying HIV to pass from one partner to the other.

The biggest risk factor for HIV transmission is sexual activity with an infected partner. Therefore, anyone who is sexually active is at risk. However, biological and behavioral factors can influence the chance of an individual acquiring HIV through sexual transmission.

Biological Risk Factors

Biological risk factors for infection include:

- gender
- genital sores
- lowered resistance

- **Gender:** Although fewer women than men are infected with STD, women are twice as likely as men to acquire an STD from a single act of sexual intercourse with an infected partner. Women's anatomy makes it easier for disease organisms to enter and to become established. While it is known that women are more likely than men to be infected during vaginal intercourse with an HIV-positive partner, no one knows exactly how much more likely.

- **Genital sores:** Open sores on the genitals allow HIV to pass directly into the bloodstream. The most common causes of these sores are STDs, such as herpes, syphilis and chancroid. The risk of infection increases dramatically when sores are present.

- **Lowered resistance:** Both men and women who are infected with one STD are more likely to be *co-infected* by other organisms. For example, people with an STD are three to five times more likely to get HIV if they are exposed to it than are people without an active infection. Similarly, people with HIV are more susceptible to other STD.

IT'S WHAT YOU DO

When it comes to HIV, remember: It's not who you are that matters. It's what you do. Unsafe behaviors can transmit HIV.

Behavioral Risk Factors

Behavioral risk factors for HIV infection include:

- number of sexual partners
- type of sexual practice
- drug use

■ **Number of sexual partners:** Multiple sexual partners—over a specific period or over the course of a lifetime—increase HIV risk significantly. Having sex with someone who has had multiple partners indirectly exposes a person to all of those previous partners. Most adult Americans have more than one sexual partner during their lifetimes; the average number is four.

■ **Type of sexual practice:** Some sexual practices are more risky than others. Anal intercourse is the most dangerous because rectal tissues are thin and easily bruise or tear.

Vaginal intercourse can transmit HIV both from man to woman and from woman to man. People who choose to have vaginal intercourse should use latex condoms and spermicides to provide a barrier to the virus. This method, although not absolutely safe, substantially reduces the risk of HIV transmission.

Oral sex on a man or a woman may transmit HIV. Although there have been cases of this type reported to health officials, no confirming studies verify this mode of transmission.

■ **Drug use:** Drugs, including alcohol, affect the user's ability to make decisions about sexual activity, condom use and risk. Exchanging sex for money and/or drugs increases the risk of exposure to HIV.

Transmission Through Contaminated Needles

Needles used in injecting drugs (including steroids) or vitamins or for piercing, tattooing or acupuncture can transmit HIV. When an HIV-infected person shares injecting equipment with another person, contaminated blood is injected directly into that person's bloodstream.

Such transmission can also occur in a medical setting in which needles and syringes are used for more than one patient. In 1989, a number of children in a Romanian hospital were infected by blood left in a syringe that was used over and over without sterilization to inject many patients. Needles are only used once in U.S. medical settings. However, there have been some cases of infection by needlestick injuries in health care professionals caring for HIV-infected patients.

Prenatal and Perinatal Transmission

HIV can be passed by a pregnant woman to the fetus in her womb. The method of transmission is not yet understood. It may occur in utero, where the fetus is constantly exposed to the mother's infected body fluids.

Transmission can also occur during birth by exposure to blood or vaginal/cervical secretions during delivery. Based on the number of HIV-infected infants, scientists estimate that an infected mother has about a 30% chance of transmitting HIV to her unborn child. HIV can also be transmitted from an infected mother to her baby during breastfeeding.

All infants born to HIV-infected mothers will have antibodies to the virus and will test positive at birth. However, only about 30% actually have HIV; the rest have only maternal antibodies that will disappear at about 15 to 18 months.

Transmission Through Blood Transfusions or Products

Because HIV thrives in white blood cells, it can be spread by contaminated blood or blood products. Before 1985, transfusions and blood factor products used by hemophiliacs were major sources of infection. Today, the U.S. blood supply is considered safe because all blood is tested for antibodies to HIV before it is used. The chance of contaminated blood slipping through undetected is estimated to be 1 in 100,000 transfusions.

Organs donated for transplant and semen donated for artificial insemination at official sperm banks are also screened for HIV.

IS DONATING BLOOD DANGEROUS?

Giving blood is completely safe for the donor. A sterile needle is used to draw blood, and it is immediately thrown away after use. Nothing is injected into the donor's vein, so there's no exposure to HIV or any other infectious agent.

Ways HIV Is Not Transmitted

HIV is transmitted by very specific behaviors. People who do not participate in unprotected sex or share needles have an extremely small risk of getting the virus.

HIV is *not* spread through the air, water or food. It cannot penetrate skin, so it is safe to touch a person with HIV/AIDS and to share eating utensils, bathrooms and household articles.

It is safe to live or work or go to school with someone who is infected. In numerous studies of families caring for AIDS patients, not one case of HIV disease has occurred in a family member who was not the sexual partner of the infected person or the child of an infected mother.

Mosquitoes, fleas and other biting insects do not transmit the virus. Donating blood is perfectly safe.

Testing for HIV

Some people may be infected with HIV for ten years or longer without symptoms. Because people may not know they are infected with HIV, they can unknowingly spread the virus to others. If people don't know they are infected, they can't take advantage of early treatment, which can prolong a healthy life.

Tests can identify HIV in human blood. There are two general kinds of tests: one detects evidence of the virus itself, and the other detects antibodies to the virus.

- **Tests for HIV:** Tests for HIV look for HIV or parts of the virus itself. These tests are more expensive, less well standardized and less readily available than tests for the HIV antibody. Usually, tests for the virus are only used when antibody test results are unclear.

- **Tests for the HIV antibody:** Although symptoms of HIV infection may not appear for years, identifiable changes in the immune system occur rather quickly. In response to the initial invasion of the virus, B-cells make antibodies against the virus. Simple blood tests are available that can find these antibodies in most people two to twelve weeks after exposure.

  Laboratories use two standard tests for detecting HIV antibodies, a screening test called the *ELISA*, followed by a confirming test known as the *Western blot*. These tests are inexpensive and in combination are about 99.9% accurate.

What the Test Results Mean

Test results are reported as negative or positive.

- **Negative** test results indicate the antibody is absent. This means one of the following is true:
  - The person has not been infected with HIV.
  - The person has had contact with HIV but has not been infected and has not produced antibodies. Repeated exposure to the virus would increase the likelihood of infection.
  - The person has been infected by HIV, but has not yet produced antibodies. Most people will make antibodies two to twelve weeks after exposure, but some people will require six months or more.

  A negative test result says nothing about future HIV status. An individual who has not been infected can stay HIV negative by practicing HIV-prevention behaviors.

- **Positive** test results indicate the antibody is present. This means both of the following are true:
  - The person is infected with HIV, and antibodies have been produced.
  - The person is capable of passing the virus on to others under the correct circumstances for transmission.

  Evidence suggests that a majority of people who are infected with HIV will eventually develop symptoms. However, no one knows what percentage of HIV-positive people will go on to develop AIDS or when. A positive test provides no indication of when or if a person will develop symptoms or get sick.

Should Testing Be Mandatory?

HIV testing is already mandatory for blood donors, military personnel and recruits, federal prisoners and adult immigrants to the United States.

Some believe mandatory testing should be extended to include pregnant women, hospital patients, medical personnel, prostitutes and marriage license applicants.

Large-scale testing programs have the following benefits:

- They allow collection of epidemiologic data that help describe current patterns of HIV infection and project future needs.
- They serve a preventive purpose by identifying infected people and counseling them about how to avoid infecting others.
- They provide the opportunity to trace sexual partners and drug contacts of infected persons. This can lead to the discovery of more cases and the chance to counsel uninfected contacts whose behavior puts them at risk.

Large-scale testing also presents the following serious concerns:

- Even though the testing protocol is 99% accurate, there remains a chance of inaccurate results, especially when testing large populations that have a low prevalence of the virus.
- Mandatory testing conflicts with a person's right to privacy.
- Confidentiality of test results cannot be guaranteed. Many HIV-positive people have been denied insurance, fired from their jobs or evicted. Some have lost custody of their children or been physically assaulted.
- There is no cure or standard treatment for HIV. People who test positive and people who test negative are counseled to do the same things.
- The cost to do large-scale testing is not efficient, based on projections that it will not identify many newly infected persons. The funding would be better used to educate the public about HIV risk and prevention and to implement universal infection-control guidelines in health care and other care-delivery settings.

Accuracy of Test Results

The HIV antibody tests are among the most accurate in medicine, but they are sometimes subject to human or technological error. The frequency of false-negative results is somewhere between 1 in 40,000 and 1 in 200,000. False positives occur once in every 135,000 tests.

Laboratories check positive blood samples two more times with the ELISA test. If the results are still positive, the Western blot test is used to confirm them. If there is any reason to question test results, repeat testing is recommended.

Reasons to Get Tested

There are two important reasons for getting tested. First, people who know they are infected can protect their health and the health of others. Second, the earlier a person with HIV is treated, the more successfully the disease can be managed.

Tests are available for anyone who is concerned about HIV. Public health officials recommend testing for people who:

- have engaged in high-risk sexual or drug-use behaviors
- have medical conditions related to HIV infection, especially other STD or tuberculosis
- received blood transfusions or blood products prior to 1985
- pose a threat to others; for example, high-risk women who are pregnant or are considering pregnancy
- have been exposed to the blood of another person
- donate blood, sperm or organs

Confidentiality of Test Results

The rules about confidentiality of HIV testing are set by each state, and procedures vary. Some states offer both anonymous and confidential testing; others only offer confidential testing.

- **Anonymous testing** means that there are no personal identifiers linked with the test. The results are kept by a number or a code name and given only in person to the individual who has that number or code name.

- **Confidential testing** means that there are personal identifiers associated with the test. Although the results are not public, they become part of a person's medical record and can be reviewed by doctors, public health officials, judges and sometimes insurance companies.

1-Minute Facts

- HIV is transmitted from one person to another through contact with certain body fluids, including blood, semen and vaginal secretions.

- Sexual transmission of HIV can occur when sexual activity causes cuts in the mucous membranes of the penis, vagina or rectum. Body fluids containing cells carrying HIV are then able to pass from one partner to the other.

- HIV can be spread by contaminated blood or blood products. Blood transfusions were a major source of infection before 1985. Today, all donated blood is screened for HIV and considered safe.

- Transmission of HIV can also take place when an HIV-infected person uses a needle to inject drugs or vitamins and then shares the needle with someone else. Whoever uses the needle afterwards may have contaminated blood injected directly into his or her bloodstream.

- Testing for HIV is vital because a person can be infected for a long period without experiencing symptoms. Knowing their HIV status makes it easier for people to protect their own health and the health of others.

- A negative HIV test does not guarantee that a person is not infected with HIV.

PREVENTION

MYTH: Any condom can help protect against HIV infection.

Fact: Latex condoms offer excellent protection against HIV transmission during sexual activities if they are used correctly. They work because they create a barrier to body fluids that HIV can't penetrate. However, natural-skin condoms, usually made from lamb's intestines, do not create a barrier to HIV.

Vaccine research on HIV has been going on for years, and in the future an HIV vaccine may be available. Several vaccines are being tested in human trials. These vaccines act either directly on the virus or indirectly by stimulating increased immune responses.

However, any vaccines that show promise in initial studies must go through a long period of testing before becoming generally available. It is likely that it will be many years before a vaccine is available.

Prevention is the only current "vaccine." Prevention of HIV depends on effective precautions regarding sexual practices and needle use, screening blood products, counseling pregnant women and practicing infection control in public and private health care settings.

Preventing Sexual Transmission

Methods to reduce the risk of sexually transmitting HIV are called "safer-sex practices." Safer sex means no body fluids—semen, preseminal fluid, blood, menstrual blood or vaginal fluids—can pass from one person's body into another person's body.

Abstinence

Abstinence means avoiding vaginal, oral and anal intercourse. Not having sex obviously reduces a person's chances of acquiring a virus that is sexually transmitted. Abstinence is the safest, most effective way to avoid HIV.

Choosing to be abstinent can have other positive benefits as well:

- It doesn't offend moral or religious beliefs.
- It prevents other sexually transmitted infections.
- It is an effective means of birth control with no medical side effects.
- It can contribute to building intimacy in a relationship.
- It offers couples the opportunity to explore alternative ways to express love and affection.

Teaching Teenagers About Abstinence

The benefits of abstinence for teenagers are obvious. Abstinence can help teens avoid STD and associated health problems, reduce rates of teenage pregnancy, and keep the rate of HIV infection low in this age group. These are wonderful benefits, so promoting abstinence certainly has its place in teenage sexuality education.

However, problems arise when people suggest that abstinence is the only acceptable means of HIV prevention. Adolescents are making their own decisions about sexual behavior, whether adults want them to or not. If abstinence is presented as the only method of HIV prevention, the more than 12 million teenagers who are sexually active are neglected.

Teenagers are surrounded by messages from peers, books, movies, TV, music and advertising that endorse and encourage sexual activity. Few resources in the popular culture present abstinence as a positive or desirable choice. Teaching skills in values clarification, decision making, self-esteem and assertiveness helps teenagers achieve balance.

In providing teenagers a thorough and careful education about HIV, educators should emphasize that abstinence is the only 100% effective method of preventing the sexual transmission of the virus.

But describing safer-sex activities is also responsible. Such teaching acknowledges that sexual activity does take place. Providing safer-sex information does not promote teenage sex; it endorses thoughtful and careful decisions about sex. It also supports health and life over disease and death.

Monogamy

The risk of HIV rises as the number of sexual partners increases. If two uninfected people have sex only with each other and neither uses injectable drugs, their risk of acquiring the virus is extremely low. This description applies to long-term monogamous relationships, typically represented by marriage.

The practice of *serial monogamy*, faithfulness to a single partner for a short time before repeating the pattern in another relationship, carries higher risk of HIV exposure. Every time two people have sex, they risk direct exposure from each other and indirect exposure from everyone the partner has ever had sex with.

Safer-Sex Options

For many people, abstinence is not a reasonable alternative. Even in loving, committed relationships, it is not unusual for one or both partners to be sexually experienced.

Anyone with prior sexual experience, however limited, must be regarded as a potential asymptomatic carrier of HIV. Therefore, couples who decide to engage in anal, oral or vaginal intercourse must use methods that reduce the risk of coming in contact with infected body fluids.

Latex *condoms* provide excellent protection against sexual transmission of HIV. Condoms work by providing a barrier that prevents direct contact between mucous membranes and the exchange of body fluids. The following tips help make sex safer with condoms:

- While they are easy to use, condoms are not foolproof. They must be used consistently and correctly to be effective. Most failures are due to forgetting to use a condom, tearing it while putting it on, or removing it improperly.

- Latex condoms offer greater protection than "natural-membrane" or animal-skin condoms. Natural-membrane condoms have larger pores, which are not effective in blocking the extremely small virus particles. Latex condoms are also substantially less expensive than condoms made from animal skins.

- To reduce the risk of breakage, the condom should be left in the package until it is needed. Condoms should be stored in a cool, dry place because heat and sunlight can weaken latex. If stored properly, condoms should remain in good condition for up to three years. Any condom in a damaged package or one that shows signs of age, such as brittleness, stickiness or discoloration, should not be used.

- The condom should be put on the penis as soon as the penis becomes erect. If there is no receptacle tip, a half inch of space should be left at the tip so the condom will not break during ejaculation. After ejaculation, the rim of the condom should be held in place while withdrawing the penis. The penis should be withdrawn while still erect. Used condoms should be discarded and not reused.

- Only water-based lubricants should be used with condoms. Petroleum jelly, baby oil, cold cream and other oil-based lubricants can weaken the condom and cause it to break.

- Spermicides, especially those containing the chemical nonoxynol-9, can make condoms even more effective. These foams, jellies, creams or contraceptive sponges form an additional barrier and have been shown to kill HIV. Condoms containing spermicides are available, but it is better to use injectable preparations or sponges inside the partner as well. Nonoxynol-9 should not be used if either partner is allergic to it.

- Condoms should be used for vaginal and anal intercourse and oral sex. Rubber or latex dams, available in dental supply stores, should be placed over a woman's genitals during oral/genital contact and over the anus during oral/anal contact.

- Research and field trials to develop an effective female condom are ongoing. A female condom could be inserted into the vagina by the woman without the knowledge or cooperation of her partner.

Risk Levels of Sexual Activities

Low Risk

- Touching, hugging, massage
- Masturbation, alone or with a partner
- Rubbing bodies together
- Talking about sex; verbal fantasies
- Social kissing (dry)
- Kissing or licking the body (clean skin; no oral contact with genitals or any open sores)
- Whatever else imaginative people can come up with that doesn't involve blood, semen or vaginal secretions

Some Risk

- Vaginal intercourse with a latex condom (as long as the condom is used properly and doesn't break)
- Oral intercourse with a condom or latex barrier over the genitals (proper use, no breakage)
- Anal intercourse with a condom (proper use, no breakage)
- French kissing (If the kiss is hard enough to draw blood, or either partner has open sores or infection in or around the mouth, the risk is higher.)

High Risk

- Vaginal intercourse without a condom
- Anal intercourse without a condom
- Oral intercourse without a condom or latex barrier
- Sharing objects inserted into the anus or vagina
- Any activity that allows blood-to-blood contact

Preventing Needle-Use Transmission

People who use needles for injecting drugs (including steroids) or vitamins or for piercing or tattooing are at high risk for HIV. Needles, syringes and other injecting equipment, or "works," are often shared among users.

If one person is HIV-infected, others who share the same needle will receive the virus in blood droplets that adhere to the apparatus. The probability of HIV infection from infected blood injected directly into the bloodstream is nearly 100%.

Using any drug reduces a person's inhibitions and ability to make critical decisions. This means drug users, whether they inject the drugs or not, are less likely to practice safer sex or safer hygiene no matter how well intentioned they may be.

Preventing Transmission from Mother to Child

Women who have HIV and become pregnant and women who become infected with HIV while they are pregnant can transmit the virus to the baby in utero or during birth. About 30% of children born to HIV-positive women have the virus. HIV can also be transmitted through infected breast milk, although the rate of infection is not known.

Thousands of children are already infected with HIV. As the rate of infection among women continues to climb, the need to develop effective prevention strategies for prenatal and perinatal transmission becomes even more important.

Needle Exchange

Many health educators who work with injection drug users advocate providing sterile needles as a way to prevent HIV transmission. They believe users should simply be able to trade used needles and syringes for new ones.

These needle-exchange programs have been introduced throughout Europe and Australia, but they remain very controversial in the United States. Only a few U.S. cities have instituted official programs; some allow unofficial distribution through community groups.

Opponents believe it is wrong to provide legal support for an illegal activity. They contend that these programs promote drug use, are disruptive to the community and pose a safety hazard, particularly for children, due to discarded needles. They argue that exchange programs divert much-needed funds from drug treatment.

Proponents contend that needle exchange is a pragmatic prevention measure that recognizes that many people will use drugs regardless of the availability of treatment. Needle exchange is comparatively much less expensive than the cost of treatment and may reduce the significant public cost of services for drug users who become HIV infected. Further, needle exchange may provide an important link to treatment and an opportunity to educate users about safer-sex practices.

Does needle exchange reduce HIV transmission? The answer is not yet known. Preliminary reports suggest there are modest reductions in needle sharing. There is no evidence that programs encourage new users.

Preventing Infected Blood Products Transmission

The risk of contracting HIV through a blood transfusion or blood product is extremely small. Since 1985, all blood and blood products in the United States have been tested for HIV antibodies. Estimates of the actual risk of a given unit of blood being infected range from 1 in 20,000 to about 1 in 100,000.

Health Care Precautions to Prevent Transmission

Health care workers are at risk for HIV infection because they routinely handle the body fluids of people whose HIV status is unknown. Therefore, people who provide health services at all levels are expected to follow universal infection-control guidelines at all times and with all patients. Educators and other caregivers also need to be aware of these precautions to avoid exposure to the virus.

- Dispose of needles and syringes in puncture-resistant containers without breaking or recapping the needle. Always dispose of needles immediately after use. Do not throw needles into a regular trash can.
- Wear gloves during contact with blood or body substances.
- Wear gloves or finger cots (sheaths) to cover cuts, abrasions, ulcers, rashes or skin infections while working.
- Wash hands as soon as possible after contact with blood or body substances or after touching objects that have been in contact with blood or body substances.
- Wear protective eyewear during procedures that may result in splashes to the face (e.g., operations, deliveries, tooth extractions).
- Wear a mask when the patient is coughing and the diagnosis of tuberculosis has not been excluded or when performing a procedure that may result in splashes of

blood or body fluids to the face or mucous membranes. Wear a mask when specified for communicable diseases that require respiratory precautions.

- Wear a gown when spills of blood or body fluids onto clothing can be expected from wounds or infected sites.

Patients who are HIV-positive should consider telling their physicians, dentists and other health care providers. This information will allow providers to give patients the best treatment possible and reduce their own infection risk during care. Health care consumers should expect providers to follow infection-control guidelines as a sign of modern medical practice.

1-Minute Facts

- A person can reduce the risk of sexual transmission of HIV by practicing abstinence, monogamy or safer sex.
- By discontinuing the use of injection drugs, a person can prevent needle-use transmission altogether. The next best precaution is to stop sharing needles with other drug users.
- The risk of infection through blood transfusions or blood products has been greatly reduced since 1985, when all donated blood in the United States began to be tested for HIV antibodies.
- Health care workers must follow universal infection-control guidelines to prevent HIV infection. These involve disposing of needles and syringes properly; wearing special clothing, including gloves; and practicing careful hygiene.

MANIFESTATIONS OF HIV INFECTION

MYTH: Everybody with HIV disease has the same symptoms.

Fact: People with HIV disease have only one symptom in common—a progressive weakening of the immune system. This loss of immune function affects individuals differently. One person may be very ill with rare cancers; another may be relatively healthy for long periods of time. Women and children may have very different disease symptoms than men.

Although there is wide individual variation, extensive research has determined that HIV disease follows stages. The amount of time a person spends in a particular stage depends on many factors, including state of health at the time of infection, nutritional status, and emotional, physical and financial support.

Some people have remained healthy for more than ten years; others become ill in less than five. All HIV-positive people, with or without symptoms, show a progressive decline in the number of helper T-cells and a decreased immune response.

After transmission of HIV occurs, the general course of HIV disease is as follows:

- acute infection
- seroconversion
- asymptomatic HIV infection or disease
- symptomatic HIV infection or disease
- AIDS

Acute Infection

The first symptoms of HIV infection occur early in the disease process. The interval between transmission of the virus and acute infection lasts, on average, between two and six weeks.

Some people with HIV have no memory of this stage, probably mistaking their mild illness for a common viral infection. Only a few people feel sick enough to see a physician. Acute HIV infection can last from a few days to three weeks. The average length is one or two weeks. Almost everyone recovers from this stage without treatment.

Between 50% and 90% of people with HIV have nonspecific symptoms (common to many viral infections) during the acute stage. These include:

- fever
- sweating
- malaise
- fatigue
- achiness
- joint pain
- headaches
- sore throat
- difficulty in swallowing
- swollen lymph glands

Occasionally, more severe symptoms appear:

- a red spotty or splotchy rash over the chest, back and abdomen
- indications of brain infection, such as severe headaches, mood and personality changes, irritability and confusion
- the loss of use of arms or legs for a short time

EMOTIONAL EFFECTS

HIV is more than a physical disease. Finding out one is HIV-positive can have devastating effects on emotional health, too. People's feelings about HIV infection vary, but everyone experiences anger, depression, fatigue, fear and guilt to some extent. These emotions are not stages, and they come in no particular order. Some people have some or all of them at once. These feelings constitute a reasonable reaction to being infected with HIV.

Seroconversion

This stage is triggered by the acute stage. The immune system begins producing antibodies against HIV, the normal response for any viral infection. Usually, however, antibodies eliminate a virus. For reasons not yet fully understood, HIV antibodies do not eliminate HIV. A person with HIV remains infected and capable of transmitting the virus as long as he or she lives.

Almost all infected people will develop antibodies to HIV within two to twelve weeks after the virus has entered the body. Once antibodies become detectable on an HIV antibody test, the person seroconverts; that is, his or her antibody status changes from negative to positive. For a few people, seroconversion can take up to a year or longer. The reason for the delay is unknown. There are no overt symptoms during this stage.

Asymptomatic HIV Infection

About 70% to 80% of people with HIV presently are in this stage of the disease. If they have not been tested, they do not know they are infected.

The length of time people can remain in this stage varies greatly. Some people have remained asymptomatic for more than ten years. The average period is five to eight years before the onset of AIDS-related symptoms. The reasons for the variation are unknown, but the following factors appear to affect the length of time one goes without symptoms:

- **Treatment:** Early intervention with medical treatments may slow the disease's progress.
- **Lifestyle:** Good nutrition, exercise, a positive psychological outlook and other general health measures help people with HIV stay well.
- **Age:** The disease progresses much faster in children and elderly people.

As the name of this stage implies, there are generally no illness symptoms. The development of symptoms depends on the level of helper T-cell destruction.

The average person has about 1,000 helper T-cells per milliliter of blood. Fluctuations in the count are normal, but a person with HIV loses about 100 cells per milliliter per year. As levels continue to fall, immune function becomes weaker. At counts of under 500 per milliliter, most people begin to develop symptoms of HIV infection.

HIV-positive people generally have constantly swollen lymph glands during this asymptomatic phase. This condition, known as *persistent generalized lymphadenopathy* (PGL), is harmless but does indicate the immune system is struggling to fight infection. The swelling may be severe and painful, or it may be unnoticeable.

Symptomatic HIV Infection

People in this stage usually have symptoms less severe than those associated with AIDS, but not always. The helper T-cell count is usually less than 500 per milliliter.

The duration of this stage varies. Some people proceed from no symptoms to the opportunistic infections characteristic of AIDS. Most HIV-positive people experience symptoms for one to two years before a diagnosis of AIDS is made.

Most of the complaints experienced by HIV-infected people can also be experienced by people who do not have HIV. The biggest differences are that in someone with HIV these symptoms are chronic—that is, they last for weeks or months—and are accompanied by a decreasing helper T-cell count.

Treatment is directed toward individual disease symptoms and may include medication, lifestyle changes and chemical prophylaxis to prevent recurrence of symptoms.

Conditional Symptoms

Certain conditions classified in this stage are attributed to HIV infection or are complicated by HIV infection. Examples of these conditions include:

- thrush
- oral hairy leukoplakia
- herpes zoster

■ **Thrush** is a fungal infection of the mouth caused by *Candida albicans*. Symptoms include white patches on the tongue, along the gum line and inside the cheek. If the thrush patches extend to the esophagus, a diagnosis of AIDS is established.

■ **Oral hairy leukoplakia** is a mouth infection that resembles thrush. It only occurs in people with HIV and indicates increasingly suppressed immune function.

- **Herpes zoster** appears as painful bands of blisters called *shingles*. The disease is caused by the same virus responsible for chicken pox, and every person who has had chicken pox harbors the shingles virus for life. Usually, it causes no problems, but high stress or weakened immune function can activate the virus, which attacks the body's nerves. Herpes zoster is not life threatening, but it can be very painful and tends to recur.

Women and HIV

Women with HIV experience chronic gynecological problems, which may appear as the first sign of immune suppression. None of these conditions are unique to HIV-positive women, but they do tend to be more persistent, more severe and less responsive to treatment in infected women.

Women with HIV are especially prone to the following conditions:

- vaginal yeast infections
- pelvic inflammatory disease (PID)
- frequent, severe bouts of genital herpes
- changes in the cervical tissue that may lead to cervical cancer
- abnormal Pap smears
- heavy or painful periods
- irregular or absent periods

The current definition of AIDS includes invasive cervical cancer as an opportunistic infection. The addition of this disease emphasizes the importance of gynecological care in medical treatment for HIV-infected women.

Constitutional Symptoms

Constitutional symptoms are vague, general symptoms that accompany chronic illnesses. For people with HIV infection, these symptoms don't go away. They usually occur when helper T-cell levels fall below 200 per milliliter. Constitutional symptoms include:

- weight loss
- diarrhea
- fever
- fatigue

- **Weight loss** can occur for a variety of reasons. HIV-infected people sometimes lose their appetites because of oral infections or depression, or because food simply doesn't taste good. Sometimes weight loss is due to the effects of illness itself, such as fever, diarrhea or increased metabolism.

- **Diarrhea** is common and debilitating. It can be caused by a microbe or by the HIV infection itself.

- **Fever** can be caused by infections or by HIV itself. Rapid rises in temperature can be preceded by chills. Some people also experience drenching night sweats. The combination of chills, night sweats and fever over 101° F (38° C) is common in the later stages of HIV disease.

- **Fatigue** is the consequence of the body constantly fighting infection. It can also result from anxiety and depression. Red blood cell counts may fall, producing anemia, which is also characterized by lack of energy. Fatigue may be so profound that the person must stay in bed most of the time.

HIV in Children

Children who are infected prenatally or just after birth react to HIV in two ways: One-third get sick very quickly, usually before the end of their first year. The rest progress toward illness more slowly. These children have no symptoms, or only mild symptoms, for two to five years. No one knows why some HIV-infected children stay healthy so much longer, but treatments can extend the length and improve the quality of life for all children with the disease.

All infants born to HIV-infected mothers will have antibodies to the virus and test positive. But only about 30% will actually have the virus; the rest have only the maternal antibodies, which will disappear at about 15 to 18 months of age.

HIV-positive children often have severe cases of normal childhood diseases such as chicken pox. Fewer antiviral and immune booster treatments are available for children. Ethics that limit the use of children in research studies restrict most AIDS research to adults. However, AZT has been approved for children with AIDS, and some antiviral drugs are currently being tested with asymptomatic children.

Acquired Immune Deficiency Syndrome (AIDS)

By CDC definition, AIDS is diagnosed by a helper T-cell count of 200 or less or by the presence of specific opportunistic infections that develop in the late stages of HIV infection. These conditions can be caused by HIV itself, but more often result from severely depressed immune function. Every part of the body can be affected. Some HIV-infected people with a helper T-cell count of 200 or less have no symptoms.

AIDS is the only stage of HIV disease that must be reported by federal law. Therefore, AIDS is the only stage for which reliable statistics exist. Public health experts estimate only about 10% of people with HIV disease currently have AIDS.

Studies show that people with AIDS can live for five years or more. Although there is no cure, advances in treatment allow many people with AIDS to lead relatively healthy, productive lives.

There are three main approaches to treating people with HIV infection:

- antivirals directed against HIV itself
- immune boosters to help improve the body's disease-fighting mechanisms
- treatment and prevention of specific opportunistic infections

Opportunistic infections are specific infections, diseases or cancers that develop because of an HIV-infected person's weakened immune system. They normally don't pose problems for uninfected people. Some of the more common opportunistic infections include:

- *Pneumocystis carinii* pneumonia (PCP)
- Kaposi's sarcoma (KS)
- tuberculosis (TB)
- toxoplasmosis
- cytomegalovirus (CMV)

■ ***Pneumocystis carinii* pneumonia**, or **PCP**, is a lung infection caused by a parasite. Most people have these microorganisms in their lungs, but a healthy immune system keeps them in check. Ninety-five percent of people with PCP also have HIV.

PCP evolves slowly. Early treatment with improved drugs has reduced PCP's death toll, which was originally close to 25%.

- **Kaposi's sarcoma**, or **KS**, is a formerly rare cancer of the blood vessels, usually in the legs. In people infected with HIV, purple or black tumors grow quickly and appear all over the body, including the internal organs.

  KS is the second leading AIDS-defining diagnosis after PCP. About 25% of all people with AIDS have KS, but it was more common in the early stages of the epidemic. Some scientists believe KS may not be a true cancer, but a sexually transmitted disease. Safer-sex practices may have reduced its frequency. People with KS can live for years with the disease.

- **Tuberculosis**, or **TB**, is caused by a common airborne mycobacterium. Many people have been exposed to and harbor the microbe in their bodies, but they don't get sick unless the immune system is depressed. People who are undernourished, old, alcoholic or living in crowded unsanitary conditions get TB, as do HIV-infected people. AIDS-related TB can be located in any part of the body, but only lung infections can be transmitted to others before treatment.

  The standard treatment for TB is antibiotics for six to nine months. AIDS-related TB requires intensive care and drug therapy. Doctors are beginning to see TB cases that are resistant to all standard drugs.

- **Toxoplasmosis** is a brain infection caused by a protozoan. It can be acquired by eating uncooked meat or by contact with the feces of infected cats. About 50% of all people have been exposed, but only immune-suppressed people get the disease. It is not contagious.

  When the protozoan infects the brain, it causes mild, nonspecific symptoms, such as fevers and muscle aches, or severe disorders, such as seizures, coma and blindness. It can be treated successfully with long-term antibiotics.

- **Cytomegalovirus**, or **CMV**, is caused by a virus in the herpes family that lives in blood cells. It is spread by contact with urine, semen and possibly saliva, generally during sexual activities. Most people have been exposed to this virus and have antibodies against it.

  People with or without HIV can develop symptoms, but in otherwise healthy individuals, the infection is mild. AIDS-related CMV infects many organs and causes pneumonia, retinitis, encephalitis and gastrointestinal diseases. About 90% of HIV-infected people develop CMV.

  CMV is incurable and hard to treat. It can be prevented through safer-sex practices and good hygiene.

AIDS Dementia Complex (ADC)

The brain is one of the most vulnerable organs to HIV. ADC occurs when the virus permeates the tissues of the brain itself. Some researchers estimate that 50 to 60% of people with HIV will experience neurological disorders.

Early symptoms include forgetfulness, inability to concentrate and slowness of thought, accompanied by physical symptoms, such as loss of balance, leg weakness and deteriorating handwriting. Emotional signs include apathy, withdrawal and depression.

Advanced signs of the disease include severe depression and advanced problems of body control, including incontinence. Brain scans often show atrophying of brain matter at this stage.

HIV can also attack the nervous system as a whole. The spinal cord can be affected, and the virus has been found in nerves in various areas of the body. Cases of *neurosyphilis* have been reported, suggesting that the risk of syphilis may be magnified when HIV is present.

1-Minute Facts

- There are many individual variations in the way HIV manifests itself, but all people who are HIV-positive show a progressive decline in helper T-cells and a decreased immune response.

- Acute infection occurs at the beginning stages of HIV infection and is often thought to be just a mild illness with common symptoms.

- Seroconversion is the stage in which an individual's antibody status changes from negative to positive.

- People with HIV infection may be asymptomatic for many years, depending partly on lifestyle, age and treatment.

- Most of the symptoms of HIV infection can also be experienced by people without HIV. However, in someone with HIV, symptoms such as fever or shingles are chronic and are always accompanied by a decreasing helper T-cell count.

- AIDS is generally defined by the presence of HIV and specific opportunistic infections, or by a helper T-cell count of 200 or less.

TREATMENT

MYTH: AZT cures AIDS.

Fact: There is no cure for HIV disease at present; however, AZT and other antiviral drugs in its class do interfere with the virus' ability to reproduce. Studies show these drugs slow down the progress of the disease, but do not rid the body of the virus.

A person with HIV can do many things to stay healthy and live a longer, higher-quality life. Good nutrition, exercise and an optimistic outlook are critical first steps.

Chemical therapies are available today to treat many of the opportunistic infections that only a few years ago were considered lethal. More important, drugs that can be taken before any illnesses appear allow people to continue their normal activities for years.

Finally, development of new medications that directly treat the virus has proceeded at an unprecedented pace. Currently, there are three antivirals that slow the spread of HIV within the body and several drugs and alternative therapies that enhance the immune system's ability to fight back.

General Recommendations for Staying Healthy

HIV disease takes a very long time to develop. People can remain healthy or experience only mild symptoms for years. Today, the asymptomatic period lasts an average of ten years.

However, some people with HIV disease don't stay well for long. Some develop AIDS-defining symptoms in as little as three years. Why one person is able to survive so much better than another is not completely understood. But it has become clear that people who are in good general health at the time of infection and continue to maintain their physical and mental health after infection stay well longer. The following recommendations can help maintain health.

- **Nutrition:** A balanced diet, including protein, fruits, vegetables, grains and milk products each day, is very important for people with HIV.

  Weight loss is a common symptom of HIV infection. Paying attention to nutrition early can avoid serious complications. All HIV-positive people should try to get enough calories to maintain their body weight. Good nutrition helps maintain and strengthen the immune system.

- **Exercise:** Regular exercise improves body function and emotional well-being. There's no reason for a person with HIV to avoid exercise as long as fatigue or other symptoms don't prevent it.

- **Rest:** Being run down and overtired increases the risk of opportunistic infections; getting plenty of rest will help.

- **Mental health:** HIV infection's effects are more than physical. HIV has a psychological effect because of the disease itself and because of society's reaction to it. Dealing with the psychological impact is critically important for people with HIV. Good mental health not only means feeling better, it also strengthens the immune system.

- **Health care:** Getting regular medical and dental care can reduce the risk of developing serious health problems. Regular monitoring of symptoms and T-cell levels can help patients and their doctors plan successful treatments.

Chemical Therapies

In the early years of the HIV epidemic, doctors could do little more than treat some of the symptoms of their patients. But as scientists have learned more about how HIV infects and multiplies, they have been able to design more effective drug therapies.

Traditionally, drugs are only offered to the public after they have been tested for both efficacy and safety in thousands of people. This process can take 12 years or longer and can be frustrating to people who need treatment immediately; it can also be expensive.

Because people with HIV do not have time to wait, the Food and Drug Administration (FDA) has significantly reduced the time required to evaluate new HIV treatments. Even so, both approved and unapproved drugs are currently being used to treat HIV.

Drugs used to treat HIV fall into three categories:

- antiviral drugs
- treatments for opportunistic infections
- immune boosters

- **Antiviral drugs:** These drugs are directed against the virus itself. They attack HIV and attempt to prevent it from reproducing in the body. AZT was the first antiviral drug to win FDA approval. Recently, ddI and ddC have been approved.

  All of these medications have been shown to slow the progress of HIV, either singly or in combination with one of the others. Studies indicate they work best when therapy begins early, before T-cell levels have dropped below 500.

All antivirals are toxic and can have severe side-effects at high dosages. Individuals may be able to tolerate one drug but not another. Some evidence suggests HIV may become resistant with long-term therapy.

- **Treatments for opportunistic infections:** Drugs in this category do not treat HIV itself; instead, they control, prevent or eliminate the infections that make people with HIV sick. Several antimicrobials that are effective for acute infections are approved for use with HIV patients.

  People with HIV can take drugs to prevent the most serious opportunistic infections. For example, prophylactic use of a common antibiotic prevents *Pneumocystis carinii* pneumonia (PCP), once the leading cause of death of people with HIV.

- **Immune boosters:** Since the start of the HIV epidemic, scientists have speculated that the most effective therapy might involve drugs that stimulate or rebuild the body's ability to fight HIV by fortifying the immune system. Although various agents have been tried, none have yet been proven effective and none have been approved by the FDA.

Getting a New Drug to Market

In the United States, all drugs used for medical therapy must be reviewed and approved by the Food and Drug Administration (FDA). The FDA is responsible for ensuring that drugs are safe and effective. It dictates certain steps be followed through a drug's discovery, testing and licensure.

- **Preclinical trials:** Experiments in test tubes and on animals determine the drug's toxicity, pharmacological properties and antimicrobial effects.

- **Phase 1 clinical trials:** The first round of tests is done in a small number of humans for a short period of time to determine the safety and dosage of a new drug.
- **Phase 2 clinical trials:** The drug is tested in 100 to 300 people for months or years to determine dosage schedule, additional information on toxicity and preliminary effectiveness.
- **Phase 3 clinical trials:** The drug is given to 1,000 to 3,000 people in doses and intervals established in earlier phases. It can take months or years to determine a drug's safety and effectiveness.
- **FDA review:** All research is submitted to the FDA in a new drug application. If approved, the FDA licenses the drug for sale in pharmacies. Physicians can then prescribe the drug for virtually any condition.
- **Phase 4 clinical trials:** New trials are sometimes ordered after a drug has been licensed to determine new dosage schedules, to review toxicity or effectiveness or to compare the drug to other drugs.

This process has set high standards to protect consumers. However, it is also expensive and time-consuming. On average, it costs about $250 million and takes 12 years to license a new drug.

New FDA Regulations for HIV

To help get HIV drugs to the people who need them faster, the FDA has streamlined the process.

Drugs for HIV get expedited review. Phase three trials require fewer participants. A new designation, called *Treatment IND*, allows physicians to prescribe the drug to people not participating in the phase three trials.

AZT was the first drug evaluated under the new regulations. It was licensed in 1987, just 13 months after trials had begun. But relatively little information was available when large numbers of people with HIV began using the drug. Post-licensing trials, for example, indicated the original dose was too high and treatment was begun too late.

Alternative Medicine

Although most people with HIV receive traditional medical treatments, about one-third also receive some form of alternative treatment.

Physicians generally have little familiarity with alternative medical practice and are skeptical about its effectiveness. However, many doctors have come to accept alternative treatments if they clearly do no harm and are used in addition to traditional approaches.

Underground Drugs

Underground drugs have not been approved by the FDA and are not in the process of being approved, but they are being taken by many HIV-positive people without a prescription.

The drugs are often distributed through "buyers' clubs," which purchase them in bulk from black-market suppliers. Some clubs are sponsored by AIDS-advocacy organizations. Although black-market sales are illegal, the FDA has not tried to shut down the clubs. In some cases, the FDA works with the clubs to ensure that hazardous drugs are not being sold.

Often there is little quality control, and there have been cases of "bad batches" of drugs that have made users very ill. Just before ddC was approved for general use, for example, samples from the underground market tested at from 50% to 300% of the recommended dosages.

Alternative Therapies

Although no alternative therapies have been established as treatment for HIV infection, many HIV-positive people have benefited from their use. Alternative therapies include:

- acupuncture
- Chinese herbs
- nutritional supplements
- visualization

- **Acupuncture:** Acupuncture is an ancient Chinese medicine in which small needles are placed at points along the body and left in place for twenty to thirty minutes. Treatment may last days or months.

  Although there is little scientific understanding of why it works, acupuncture clearly has biologic effects. It has been used successfully to treat many conditions. Some HIV-positive people do claim relief from symptoms such as nausea or pain.

- **Chinese herbs:** Research from China, Japan and the United States indicates ingredients found in Chinese herbs can improve immune response depressed by certain drugs or radiation. There is no evidence that these herbs can have the same effect on immune functions depressed by HIV. However, some HIV-positive people claim their overall health improves and secondary infections clear more quickly when they consume herbal preparations.

  Chinese herbs can be used in combination with traditional drug therapy and have been used to counter the side-effects of AZT and other antiviral medications.

- **Nutritional supplements:** Advocates of nutritional supplements claim they can inhibit the growth of HIV or enhance the immune system. None of the supplements has established by scientific standards that it will help.

- **Visualization:** Visualization is the practice of creating mental images of a desired outcome. It has been used very successfully in sports to improve performance and to raise self-confidence.

  People with HIV imagine their immune system attacking and killing HIV and their bodies becoming stronger and healthier. It is not known if this is effective. However, techniques such as visualization, guided imagery, laugh therapy and other forms of "mind work" may help people feel happier and more in control of their health.

1-Minute Facts

- Staying healthy longer with HIV requires proper nutrition, exercise, rest and adequate health care. It is also important to maintain a healthy attitude.

- Three types of chemical therapies are used to treat HIV: drugs directed against the virus itself, drugs used to treat or prevent opportunistic infections and drugs used to boost immunity.

- Many people infected with HIV seek alternative medical treatments to relieve their symptoms.

Public Policy Challenges

Myth: AIDS is not my problem.

Fact: AIDS is everybody's problem. There is no "us and them" with this disease. It is not a punishment that is selectively inflicted on bad people. HIV doesn't care who you are, how much money you have, what color your skin is, or whether you're male or female or young or old.

HIV and AIDS raise basic questions about the rights of individuals versus those of society, about the role of government in the provision of health care and about the way our social structure can respond to change.

The following factors have hampered efforts to develop consistent public policies regarding employment, school attendance, discrimination, health care and public health:

- lack of knowledge about the virus (primarily in the first few years of the epidemic)
- lack of an effective treatment or cure
- long latency period without symptoms

- wide range of symptoms
- prejudice against homosexuals, drug users and poor people
- a health care system that is slow to change

The National Commission on AIDS

The National Commission on AIDS was established in 1989 to advise Congress and the president on development of national policy for dealing with the HIV epidemic.

The commission released its final report, *AIDS: An Expanding Tragedy,* in June 1993. The report included two recommendations for a more adequate national response to HIV:

- Leaders at all levels must speak out about AIDS to their constituencies.
- We must develop a clear, well-articulated national plan for confronting AIDS.

The report went on to state:

> "We are vividly aware of the fact that addressing AIDS—and particularly issues that require discussing sexuality or drug use—is difficult for many to deal with comfortably. Further, some of the steps that will be required to address the epidemic better will be unpleasant or unpopular in the minds of many. But to confront difficult and sensitive issues is what true leadership means and requires. It would, in our judgment, make a profound difference in our national response to HIV disease if full and frank discussion of all its implications was initiated and encouraged by those in positions of responsibility at all levels.... [H]igh on our list of recommendations has been the development of a carefully crafted national strategic plan to address the issues of prevention, care, and research, required to deal with the HIV epidemic."

Legal Aspects

Both federal and state laws pertain to the handling of the HIV epidemic.

Federal

Section 504 of the Rehabilitation Act of 1973 protects all citizens of the United States against discrimination on the grounds of race, sex, creed, color or handicap. Because the term *handicap* includes AIDS, people with AIDS are protected from discrimination.

This antidiscrimination law applies to all service providers and organizations, such as employers, health care providers and social services, that receive federal funds directly or indirectly through state and local agencies. The Americans with Disabilities Act of 1990 extends federal protection against discrimination to all people with HIV infection and applies to all service providers and organizations, whether they receive federal funds or not.

State

State laws regarding HIV disease vary, but most states do protect citizens against discrimination on the basis of handicap or disability. These state laws govern rights to public accommodation, housing, employment, confidentiality and medical care.

- **Public accommodation** is any place open to and serving the public. Depending on the state, public accommodation can include schools, doctors' offices, hospitals, nursing homes, funeral homes, public transportation, restaurants, hotels, etc.

- **Housing** cannot be denied on the basis of disability in most states. It is illegal to refuse to lease or sell housing to anyone who can afford it. It is illegal to evict anyone because he or she is disabled by HIV.

- **Employment** cannot be denied on the basis of disability in most states. A person cannot be fired because of HIV status, and employers are required to make reasonable accommodation for an individual's disability (e.g., reassignment).

- **Confidentiality** of a person's medical record, including HIV status, is protected in most circumstances. Generally, it is illegal for physicians or other health workers to release a person's name and health information without written patient authorization. However, there are certain conditions in which this does not apply. For example, when a person applies for insurance, the company is usually authorized to request medical records.

  Physicians are required to report every case of AIDS they treat to the public health department. Some states also require physicians to report HIV infection. Many states require that reports of AIDS diagnoses include patient name or another identifier, such as a social security number. In most states, public health departments are prohibited from releasing names without a court order. States are required to report AIDS cases to the federal government as statistics, not names.

- **Medical care** cannot be denied on the basis of ethnicity, sex, creed, color or disability in most states. Everyone has the right to an explanation of all treatments, risks and alternatives before deciding to accept or refuse a test, drug or surgical procedure. Everyone has the right to see his or her medical record and to choose an attending physician.

  Hospitals, as public accommodations, cannot refuse to treat a person because of HIV infection. They can, however, limit the kinds of treatment they offer and can refuse to treat anyone who requires services they do not offer.

  Physicians who do not consider themselves competent to treat someone with HIV can refuse care on this basis. If an ongoing relationship with the physician has already been established, he or she must help locate another physician who can provide the necessary care.

Developing HIV/AIDS Policies

More than 1 million people in the United States are already infected with HIV, and millions more will become infected in the near future. Therefore, it is increasingly likely that everyone will interact with people in various stages of HIV disease in many everyday settings.

All schools, businesses, health care facilities and other organizations should develop HIV policies. A good policy should include these principles:

- People with HIV infection or AIDS are entitled to the same rights and opportunities as people with other serious or life-threatening illnesses.
- At a minimum, policies must comply with federal, state and local laws and regulations.
- People with HIV infection or AIDS do not pose a threat of transmission through ordinary contact.
- Organizational leaders should unequivocally endorse nondiscriminatory policies and educational programs about HIV and communicate their support in clear, simple, unambiguous terms.
- Students and workers should have access to accurate, up-to-date education about risk reduction in their personal lives.
- Organizational leaders have a duty to protect the confidentiality of medical information.
- HIV screening should not be a requirement for employment or attendance at or participation in programs.
- In special settings where there may be a potential risk of exposure to HIV, specific ongoing education, training and necessary equipment should be provided to ensure that appropriate infection control procedures are implemented.

The Role of Schools

Schools are an ideal setting for reaching young people with prevention education. Giving students information about HIV and teaching them skills for choosing healthy behaviors will save lives.

By its very nature, HIV education requires providing information about human sexuality and drug use. Teaching about these topics in public school settings has been controversial. Some people believe that sexuality and drug education have no place in school. However, most Americans believe that school involvement is both proper and necessary.

There are other important reasons to address HIV in classrooms. HIV is part of life; it is a major health problem throughout the world. It has profoundly affected social, economic and political systems. So many people have the virus that it is likely everyone will know at least one individual who is directly affected. And, as treatment improves, a growing number of infected teachers and students will be part of the school community.

PARENT NOTIFICATION

In most states, schools are legally bound to provide parents with the opportunity to review curriculum content and materials used to instruct their children about HIV. Parents may deny permission for their child's participation. Nationwide, parents rarely exercise this option. More than 95% of students do receive HIV education in school.

Research shows that HIV education is most effective when it is part of a sequential, comprehensive, kindergarten through grade 12 health curriculum. The information must be age appropriate and must be designed to influence knowledge and attitudes, and, ultimately, to shape behavior.

Program Planning

Successful implementation of health education programs usually reflects careful planning. The following steps can help smooth the transition from idea to reality:

- Develop a clear statement of why HIV education is important.
- Form an advisory committee that includes administrators, teachers, students, parents, medical personnel and community members.
- Develop guidelines for program design and implementation, including teacher preparation.
- Generate guidelines for the selection, development and evaluation of instructional materials.
- Design a process for dealing with controversy.
- Build a schedule for reviewing and updating materials annually.
- Provide a method to evaluate program effectiveness.
- Encourage parental involvement at all stages of program development and implementation.

1-Minute Facts

- Issues of public policy regarding HIV/AIDS are complicated because they contrast the rights of the individual with those of society as a whole.

- State laws protecting the rights of people with HIV vary from state to state. Federal law that prohibits discrimination against people with HIV applies to all service providers and organizations.

- In developing HIV/AIDS policies, it is important to stay informed about laws and safety while protecting people with HIV from discrimination.

- Research shows that HIV/AIDS prevention education is most effective when it is part of a continuing kindergarten through grade 12 health curriculum and is designed to shape healthy behavior.

Glossary

A

AIDS (Acquired Immune Deficiency Syndrome)—A viral disease that damages the body's immune system, making the infected person susceptible to a wide range of serious diseases.

antibody—A protein produced by the body's white blood cells to neutralize or destroy invading foreign chemical substances.

antigen—A foreign chemical substance that causes the immune system to react when it enters the body.

ARC (AIDS-related complex)—A term used to describe a variety of symptoms and signs found in some people with HIV. No longer used today.

asymptomatic HIV infection—A condition that occurs when a person is infected with HIV but shows no physical symptoms of immune suppression.

AZT—The first antiviral drug (zidovudine, retrovir, azidothymidine) used to treat HIV infection.

B

B-cells—Lymphocytes that develop in the bone marrow and protect against disease and infection.

benign—Nonmalignant; not immediately life-threatening.

blood transfusion—The transfer of blood, drawn from a donor, into the vein to treat illness or injury.

C

carcinogenic—Capable of causing cancer.

carcinoma—A malignant cancer of the tissue surfaces such as skin, linings of the internal organs, and glands; the most common type of cancer.

CDC (Centers for Disease Control and Prevention)—A federal agency based in Atlanta that studies and monitors the incidence and prevalence of diseases in the United States; also provides health and safety guidelines for the prevention of disease.

chemotherapy—The treatment of disease by the use of drugs.

cilia—Tiny hair-like projections that line certain parts of the body, such as the respiratory tract. Their constant motion helps sweep away foreign particles and prevent pathogens from entering the body.

co-infection—Having more than one infection at the same time.

condom—A latex sheath used to cover the penis during intercourse to prevent pregnancy and the transmission of sexual diseases; also called rubbers, prophylactics, skins.

contagious—Refers to a time period when an infected person is able to pass an infectious disease to another person by direct or indirect contact.

D

disease—A particular destructive process in an organ or organism, with a specific cause and characteristic symptoms.

E

ELISA (enzyme-linked immunosorbent assay)—A test used to detect HIV antibodies in blood samples.

epidemic—A disease that exceeds the expected number of cases of the disease.

epidemiology—The study of the distribution of diseases in a population and the factors that influence the occurrence of disease.

epithelial—Cells that line the surface of the skin, mucous membranes and body cavities.

F

false negative—In an HIV-antibody test, a result that reads negative when there is actually antibody in the blood.

false positive—In an HIV-antibody test, a result that reads positive when there is actually no antibody in the blood.

H

HIV (human immunodeficiency virus)—The virus that causes AIDS.

HIV disease—A term usually indicating the condition that occurs when a person has been infected with HIV and shows mild or severe symptoms of immune suppression; considered by some, but not all, to include the asymptomatic stage of HIV infection as well.

HIV infection—The condition that occurs when a person has been infected with HIV. A person with HIV infection may be without symptoms of immune suppression, may have mild or severe symptoms, or may have a diagnosis of AIDS.

HTLV-III (human T-cell lymphotropic virus, type three)—The name given to the AIDS virus by Dr. Robert C. Gallo of the National Cancer Institute.

I

IFA (immunofluorescent assay)—A test used to detect HIV antibodies in blood; it is often used to verify ELISA results.

immune system—The body's system of defense against disease, consisting of specialized cells and proteins in the blood and other body fluids.

immunity—The state of being able to resist a particular disease by counteracting the potential effects of a foreign substance or pathogen.

immunoglobulins—Protein substances in the blood serum.

incubation—The time span between exposure to a disease organism and the onset of symptoms.

infectious—Refers to a disease spread by pathogens.

inflammation—A response of the body to infection or injury characterized by redness, swelling, fever and pain.

intercourse—A type of sexual contact involving one of the following: (1) insertion of a man's penis into a woman's vagina (vaginal intercourse), (2) placement of the mouth on the genitals of another person (oral intercourse) or (3) insertion of a man's penis into the anus of another person (anal intercourse).

interferons—A family of proteins produced in response to infection with a virus. They protect neighboring host cells from infection.

intravenous—"Within veins"; injection by needles directly into the blood veins.

K

Kaposi's sarcoma (KS)—A tumor of the blood and/or lymphatic vessel walls; often appears as pink or purple blotches on the skin.

killer T-cell—A type of T-cell that destroys cells identified as foreign or unnatural.

L

LAV (lymphadenopathy-associated virus)—The name given to the AIDS virus by Dr. Luc Montagnier of the Institute Pasteur, Paris.

leukemia—Cancer of the blood-forming tissues of the body, characterized by the production of abnormal white blood cells.

lubricant—A substance applied to condoms or sexual organs that makes contact between the condom and the skin slippery.

lymphadenopathy—The condition of swollen lymph nodes; often a sign of infection or illness.

lymphocyte—A white blood cell that circulates in blood and lymph fluid.

lymphoma—Cancer of the lymph system.

M

malignant—Cancerous and of life-threatening potential.

metastasis—A term usually applied to a malignant growth that develops in one part of the body as a result of the spread of abnormal cells from another part of the body, or to the process by which this spread occurs.

mutate—Change in normal structure or function.

N

neurologic—Pertaining to the nervous system or brain.

nonoxynol-9—A spermicide that has been shown to kill HIV in laboratory studies. It can be used as a lubricant to increase condom effectiveness.

O

opportunistic infection—An infection caused by any microorganism that does not normally cause disease but becomes pathogenic when the host's immune system is compromised.

P

pathogen—A microorganism that can cause disease, e.g., bacterium, virus, fungus.

phagocyte—A cell that can ingest and destroy foreign materials within the body.

PLWA—Person living with AIDS.

***Pneumocystis carinii* pneumonia (PCP)**—The most common life-threatening opportunistic infection diagnosed in AIDS; caused by a protozoan parasite, it causes difficulty in breathing and is the most common cause of death for people with AIDS.

prophylaxis—Treatment intended to preserve health and prevent the onset or spread of disease.

PWA—Person with AIDS.

R

radiation therapy—The X-ray treatment of tumors, especially those of a cancerous nature, to reduce their size and potential destructiveness.

reservoir—An environment conducive to the maintenance of pathogens.

risk—The likelihood of injury, damage or other negative consequences following an action.

S

safer sex—Sexual activity that protects from infection with HIV because no body fluids are exchanged.

secretion—A substance exuded from blood or cells that may have cleansing or lubricating characteristics.

seroconversion—The point at which antibodies become detectable; when a person's antibody status changes from positive to negative.

seropositive—In the case of HIV, a condition of having HIV antibodies in the blood.

spermicide—Any substance used to help prevent pregnancy because of its ability to kill sperm.

STD (sexually transmitted disease)—Any of a number of diseases that can spread through sexual contact.

surveillance—In public health terms, monitoring and collecting data on the incidence of disease; counting the number of cases.

symptomatic HIV infection—The condition that occurs when a person has been infected with HIV and shows mild or severe symptoms of immune suppression.

systemic—Affecting the entire organism or bodily system.

T

T-cell—A specialized white blood cell that helps the immune system respond to infection.

toxin—A poisonous compound that causes disease.

tumor—An accumulation of abnormal, or cancerous, cells.

V

vaccine—A preparation containing killed or weakened viruses or bacteria. It is administered to give a person immunity to a specific disease organism or toxin.

virus—An organism formed of genes surrounded by a protein coating; technically, not a living organism since it cannot reproduce itself but must invade a living cell to replicate.

W

Western blot—A test used to detect HIV antibodies in blood.

Resources

AIDS ACTION Committee
131 Clarendon St.
Boston, MA 02116
Hotline: 800-235-2331
617-437-6200

AIDS Action Council
1875 Connecticut Ave., Suite 700
Washington, DC 20009
202-986-1300

AIDS Resource Center
275 7th Ave., 12th Floor
New York, NY 10001
212-633-2500

AIDS Surveillance Program
The Preventative Health Services Administration
1660 L St. NW, Suite 712
Washington, DC 20036
202-673-3525

American Alliance for Health, Physical Education, Recreation and Dance
1900 Association Dr.
Reston, VA 22091
703-476-3400

American Association of Sex Educators, Counselors and Therapists
435 N. Michigan Ave., Suite 1717
Chicago, IL 60611
312-644-0828

American Cancer Society National Office
1599 Clifton Rd. NE
Atlanta, GA 30329
800-255-2352
Response system: 800-ACS-2345

American Foundation for AIDS Research
5900 Wilshire Blvd., 23rd Floor
Los Angeles, CA 90036
213-857-5900

American Heart Association
7272 Greenville Ave.
Dallas, TX 75231
800-242-1793

American Medical Association
Department of Health Education
515 State St.
Chicago, IL 60610
312-464-5000
Customer service: 800-621-8335

American Pharmaceutical Association
2215 Constitution Ave. NW
Washington, DC 20037
202-628-4410

American Psychiatric Association (APA)
1400 K St. NW
Washington, DC 20005
202-682-6000

American Psychological Association
750 First St. NE
Washington, DC 20002
202-336-5500

American Public Health Association
1015 Fifteenth St. NW
Washington, DC 20005
202-789-5600

American Red Cross
HIV/AIDS Education Office
1750 K St. NW, 7th Floor
Washington, DC 20006
202-662-1577; 202-973-6000
or contact local Red Cross

American School Health Association
P.O. Box 708
Kent, OH 44240
216-678-1601

American Social Health Association
P.O. Box 13827
Research Triangle Park, NC 27709
919-361-8400

Cancer Information Service
Office of Cancer Communications
National Cancer Institute
Building 31, Room 10A24
9000 Rockville Pike
Bethesda, MD 20892
800-4-CANCER

Centers for Disease Control and Prevention (CDC)
1600 Clinton Rd. NE
Atlanta, GA 30333
404-639-3311
AIDS hotline: 800-342-AIDS

Center for Population Options
1025 Vermont Ave. NW, Suite 210
Washington, DC 20005
202-347-5700

Clearinghouse on Health Indexes
Division of Analysis
Office of Analysis and Epidemiology
National Center for Health Statistics
Centers for Disease Control and Prevention
6525 Belcrest Rd., Room 790
Hyattsville, MD 20782
301-436-7035

Gay Men's Health Crisis, Inc.
129 W. 20th St.
New York, NY 10011
212-807-6655 (English/Spanish)
212-645-7470 (TDD)

Health Education and Resource Organization (HERO)
101 W. Read St., Suite 825
Baltimore, MD 21201
800-638-6252; 410-685-1180
Hotline: 410-333-2437
800-553-3140 (TTY)

Hispanic AIDS Forum Hotline
121 6th Ave., Room 505
New York, NY 10013
212-966-6662 (English/Spanish)

March of Dimes, Birth Defects Foundation
Public Health Education Department
1275 Mamaroneck Ave.
White Plains, NY 10605
914-428-7100

National AIDS Information Clearinghouse
P.O. Box 6003
Rockville, MD 20849-6003
800-458-5231

National Association of People With AIDS
1413 K St. NW
Washington, DC 20005
202-898-0414

National Clearinghouse for Maternal and Child Health
8201 Greensboro Dr., Suite 600
McLean, VA 22102
703-821-8955

National Coalition of Hispanic Health and Human Service Organizations
1501 16th St. NW
Washington, DC 20036
202-387-5000

National Health Information Center
Office of Disease Prevention and Health Promotion
P.O. Box 1133
Washington, DC 20013
800-336-4797

National Heart, Lung and Blood Institute
Education Programs Information Center
P.O. Box 30105
Bethesda, MD 20824
301-251-1222

National Hemophilia Foundation
110 Greene St., Suite 303
New York, NY 10012
212-219-8180

National Lesbian and Gay Health Foundation
P.O. Box 65472
Washington, DC 20035
202-797-3708

National Minority AIDS Council
300 I St. NE, Suite 400
Washington, DC 20002
202-544-1076

National Native American AIDS Prevention Center
3515 Grand Ave., Suite 100
Oakland, CA 94610
510-444-2051

National Self-Help Clearinghouse
25 W. 43rd St., Room 620
New York, NY 10036
212-354-8525

San Francisco AIDS Foundation
P.O. Box 426182
San Francisco, CA 94142
800-FOR-AIDS (English/Spanish)
800-255-3060 (Tagalog)

Sex Information and Education Council of the United States (SIECUS)
130 West 42nd St., Suite 2500
New York, NY 10036
212-819-9770

U.S. Public Health Service
Office of Communication
News Division
Hubert H. Humphrey Building, Room 717H
200 Independence Ave. SW
Washington, DC 20201

References

Allain, J. P. 1988. *Retrovirus learning guide.* Abbott Park, IL: Abbott Laboratories.

Bartlett, J. G., and A. K. Finkbeiner. 1991. *The guide to living with HIV infection.* Baltimore, MD: The Johns Hopkins University Press.

Bernstein, E., et al., eds. 1992. *1993 medical and health annual.* Chicago, IL: Encyclopaedia Britannica.

Black, D. 1986. *The plague years: A chronicle of AIDS, the epidemic of our times.* New York: Simon and Schuster.

Bruckheim, A. 1992. *The family doctor.* Portland, OR: Creative Multimedia Corporation.

Cohen, A. 1992. PTA in action: Addressing the controversy surrounding HIV and AIDS. *PTA Today* (April): 24-26.

Donovan, P. 1993. *Testing positive: Sexually transmitted disease and the public health response.* New York: The Allan Guttmacher Institute.

Heller, K. S. 1990. Education strategies to prevent AIDS: Rationale. In *The AIDS knowledge base*, ed. P. T. Cohen, M. A. Sands and P. A. Vollerding, 11.1.1. Waltham, MA: The Medical Publishing Group.

Hiatt, J. 1992. *What is safer sex?* Santa Cruz, CA: ETR Associates.

Institute of Medicine, National Academy of Sciences. 1986. *Mobilizing against AIDS: The unfinished story of a virus.* Cambridge, MA: Harvard University Press.

Masters, W., V. Johnson and R. Kolondny. 1988. *Crisis heterosexual behavior in the age of AIDS.* New York: Grove Press.

McHenry, R., et al., eds. 1992. *The new encyclopaedia britannica.* Chicago, IL: Encyclopaedia Britannica.

Middleton, K., B. Hubbard, W. Kane and J. Taylor. 1991. *Contemporary health series: The trainer's guide.* Santa Cruz, CA: ETR Associates.

Mullen, K., R. Gold, P. Belcastro and R. McDermott. 1993. *Connections for health.* 3d ed. Madison, WI: WCB Brown and Benchmark.

National Commission on AIDS. 1993. *AIDS: An expanding tragedy: The final report of the National Commission on AIDS.* Washington, DC.

Quackenbush, M., and P. Sargent. 1990. *Teaching AIDS: A resource guide on Acquired Immune Deficiency Syndrome.* 3d ed. Santa Cruz, CA: ETR Associates.

Quackenbush, M., and S. Villarreal. 1992. *Does AIDS hurt? Educating young children about AIDS.* 2d ed. Santa Cruz, CA: ETR Associates.

Schettler, J. 1992. *HIV: The antibody test.* Santa Cruz, CA: ETR Associates.

Schwartz, R. 1992. *AIDS medical guide.* San Francisco, CA: San Francisco AIDS Foundation.

Stang, L. 1989. *Talking with your partner about using condoms.* Santa Cruz, CA: ETR Associates.

Tierney, L., S. McPhee, M. Papadakis and S. Schroeder, eds. 1993. *Current medical diagnosis and treatment.* Norwalk, CT: Appleton and Lange.

University of California, Berkeley, School of Public Health. 1991. *The wellness encyclopedia: The comprehensive family resource for safeguarding health and preventing illness.* Boston: Houghton Mifflin.

Wachter, R. M. 1991. *The fragile coalition: Scientists, activists, and AIDS.* New York: St. Martin's Press.

Zevin, D. 1989. *Into adolescence: Choosing abstinence.* Santa Cruz, CA: ETR Associates.

Index

abstinence, 36–37
acupuncture, 63
acute infection stage, 46–47
ADC (AIDS dementia complex), 55
adolescents, 9
age factors, 48
AIDS (Acquired Immune Deficiency Syndrome), 4, 8, 52–55, 73
  developing, 31
  diagnosing, 18
  transmission trends, 9–10
  See also HIV infection
alternative medicine, 62–63
anal herpes, 2
antibodies, 16, 17, 73
antigens, 15, 17, 73
ARC (AIDS-related complex), 5–6, 73
asymptomatic HIV infection stage, 48, 73
AZT, 52, 59, 73

B-cells, 15, 16, 17, 74
blood products, 29, 33, 43
blood transfusions, 6, 29, 33, 74

CDC (Centers for Disease Control and Prevention), 1–2, 74
cell-mediated immunity, 16
chemical therapies, 59–61
children, 48, 52
CMV (cytomegalovirus), 2, 53, 55
co-infection, 26, 74
condoms, 27, 38–40, 74
confidentiality, 68
contagious diseases, 24
contagious period, 74

diet and nutrition, 58, 63
discrimination, 67–68
disease, 74
DNA (deoxyribonucleic acid), 21
drug therapies, 59–61
drug use, 9, 27, 28, 41

educational issues, 70–71
ELISA (enzyme-linked immunosorbent assay) test, 30, 33, 75
emotional effects, 47
employment, 68
epidemiology, 32, 75
exercise, 58

false negatives, 33, 75
false positives, 32, 75
Food and Drug Administration (FDA), 59, 60–61

helper T-cells, 16, 17, 18, 19–22
herbs, 63
herpes, anal, 2
herpes zoster, 50
HIV disease, 6, 75
  stages, 45–46
  transmission trends, 9–10
  treating, 57–64
HIV (human immunodeficiency virus), 5, 75
  immune system and, 19–22
  origins, 7–8
  risk factors for, 26–27
  terminology, 3–5
  testing for, 30–34
  transmitting, 6, 23–29
HIV infection, 6, 75
  emotional effects, 47
  epidemic of, ix–x, 1–11
  manifestations, 45–56
  preventing, 35–44
  scope, 5–7
HIV vaccine, 18
homosexual lifestyle, 2–3
housing, 67
HTLV-III, 4, 75

immune response, 15–18, 76
immune system, 19–22, 76
immunoglobulins, 16, 76
incubation, 24, 76
infants, 52
infection
  by HIV, 19–22
  responses to, 13–18
infection-control guidelines, 43–44
infectious diseases, 24, 76
inflammatory response, 14, 76

intercourse, 6, 25, 26, 27, 76
interferons, 14, 76

killer T-cells, 16, 76
KS (Kaposi's sarcoma), 2, 53, 54, 76

LAV (lymphadenopathy-associated virus), 4, 77
legal issues, 67–68
leukemia, 77
leukoplakia, 49
lifestyle issues, 48, 58–59
lubricants, 39, 77
lymphocytes, 15, 18, 77

mentally healthy individuals, 58
monogamy, 38
mutation, 8, 77
National Commission on AIDS, 66
needles
  contaminated, 28
  exchanging, 42
  transmission by, 41
neurologic system, 77
nonoxynol-9, 39, 77
nutritional supplements, 63

opportunistic infections, 13, 18, 53, 60, 78

passive immunity, 15
pathogens, 13–18, 78
PCP (*Pneumocystis carinii* pneumonia), 1, 53, 60, 78
perinatal transmission, 28, 41
PGL (persistent generalized lymphadenopathy), 48
phagocytes, 14, 17, 78
PLWA (person living with AIDS), 786
prenatal transmission, 28, 41
prevention, 35–44, 58–59
public policy, 65–72
PWA (person with AIDS), 6, 78

red blood cells, 51
retroviruses, 21
reverse transcriptase, 21
risks, 78
  in blood products transmission, 43
  for HIV, 26–27
  in needle-use transmission, 41
  in sexual activities, 40
RNA (ribonucleic acid), 21

safer sex, 36–40, 79
secretion, 79
seroconversion stage, 47, 79
seropositive, 79
sexual intercourse. *See* intercourse
spermicides, 27, 39, 79
STDs (sexually transmitted diseases), 10, 26, 33, 79
suppressor T-cells, 16, 21
surveillance, 79
symptomatic HIV infection stage, 49–52, 79
syndromes, 5

tattooing, 6
TB (tuberculosis), 53, 54
T-cells, 15, 16, 17, 18, 19–22, 48, 79
tests for HIV/AIDS, 30–34
thrush, 2, 49
toxins, 18, 79
toxoplasmosis, 53, 54

vaccines, 13, 18, 35–36, 80
viruses, 21, 80
visualization, 63

Western blot test, 30, 33, 80
white blood cells, 14, 17
women, 9, 50

Get Health Facts...FAST!

Familiarize yourself quickly with key health topics and feel confident you've got the most important facts. Designed specifically for educators and other professionals who are called upon to become "instant teachers" in an unfamiliar area, *Health Facts* books enable you to confidently answer questions; present clear, reliable information; and lead focused discussions.

HIV Prevention: Health Facts **offers you a highly accessible format for quick, easy reference. This easy-to-read resource:**

- **explains infection through illness and death**
- **discusses how HIV attacks the body and the body's response**
- **covers risk and prevention behaviors**
- **examines transmission and testing**
- **outlines prevention measures**
- **provides everything you need to prepare when time or subject knowledge is limited!**

Other books in the *Health Facts* series:

Disease Prevention
Drug Use Prevention
Environmental and Community Health
Fitness
Injury and Violence Prevention
Mental and Emotional Health
Nutrition
Sexuality
STD Prevention

BEST COPY AVAILABLE

ISBN 1-56071-184-1